DYNECOL

FILE

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

January 28, 1999

Michigan Permits Units
US EPA-REGION 5
77 W Jackson
Chicago, IL 60604

Dear Director:

Subject: Correction of Typographical Errors;
Hazardous Waste Facility Operating License;
Dynecol, Inc.; MID 074 259 565.

Under the provisions of Rule 299.9519(5) (a) (i) of the Michigan Administrative Code, you are hereby advised that Dynecol has made the following minor modifications to their Operating License:

1. Add Hazardous Waste Code D020 to Table C.2 to make the table consistent with page C-4 of Attachment 1 to the license, which references treatment methods for D020.

2. Amend Condition III.B. 1 of the license to allow for storage of totes with capacities of 500 gallons or less consistent with Condition III.B.2, which already contains this language for 55-gallon drums.

Please contact the undersigned if you would like further information; or you may contact Mr. Dan Dailey of the Hazardous Waste Program Section, WMD, at (517) 335-6610.

Sincerely,

M Dwinnells

Molly Dwinnells
Regulatory Compliance

DYNECOL

Michigan Act 64
Operating License Reapplication
Volume 1

January 1995

COMMITMENT TO EXCELLENCE

FILE

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET www deq state mi us

RUSSELL J. HARDING, Director

REPLY TO

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

RECEIVED 3/27/98

March 16, 1998

Mr. Hak Cho, Chief
Illinois, Indiana, Michigan Permits Section
Waste, Pesticides and Toxics Division
U.S. EPA, Region 5 (HRP-8J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Cho:

SUBJECT: Dynecol, Inc. (Dynecol) Operating License Renewed, Detroit, Wayne County, Michigan; MID 074 259 565

On March 16, 1998, the Waste Management Division (WMD) renewed a hazardous waste treatment and storage facility operating license for Dynecol, located at 6520 Georgia Street in Detroit, Michigan. Please refer to the enclosed Notice of Final Decision for further information. Also enclosed for your files are copies of the Operating License Renewal, the Responsiveness Summary to significant comments received during the public comment period, and the Fact Sheet for the operating license renewal.

If you have any questions, please contact Mr. Daniel Dailey of the Hazardous Waste Permits Unit, at 517-335-6610.

Sincerely,

Kenneth J. Burda

Kenneth J. Burda, Chief
Hazardous Waste Program Section
Waste Management Division
517-373-0530

Enclosures
cc: Mr. Greg Rudloff, U.S. EPA
Dr. Ben Okwumabua/Mr. Larry AuBuchon/Ms. Jeanette Noechel
DEQ-Southeast Michigan
Mr. Daniel Dailey, DEQ/Operating License File

EQP 0100e
(Rev 1/98)

RESPONSIVENESS SUMMARY

Dynecol, Inc.; MID 074 259 565
Hazardous Waste Storage and Treatment Facility Operating License Renewal

March 16, 1998

On September 30, 1997, the Department of Environmental Quality, Waste Management Division began a public comment period to receive comments on a draft hazardous waste treatment and storage facility operating license renewal for Dynecol, Inc. The public comment period included a November 3, 1997 public hearing at Cooper Elementary School on Georgia Street in Detroit, Michigan and ended on November 14, 1997. The public comment period and public hearing were announced in the *Detroit Free Press* and on local radio station WJR. The public comment period was conducted in accordance with Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451).

Per Administrative Rule 299.9515 for Part 111 of Act 451, this Responsiveness Summary is meant to respond to significant comments received during the public comment period, and to describe changes to the draft operating license renewal as a result of those comments. However, no public comments were received during the public comment period or at the public hearing and, therefore, no changes were made to the draft operating license renewal as a result of the public comment.

NOTICE OF FINAL DECISION

Dynecol, Inc.; MID 074 259 565
Hazardous Waste Treatment and Storage Facility
Operating License Renewal

March 16, 1998

On March 16, 1998, the Department of Environmental Quality (DEQ) renewed a hazardous waste treatment and storage facility operating license for Dynecol, Inc. (Dynecol), pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The operating license renewal allows Dynecol to continue to operate its hazardous waste treatment and storage facility located at 6520 Georgia Street in Detroit, Michigan.

The operating license renewal may be reviewed at the DEQ's Waste Management Division (WMD) Office, located on the first floor of the John A. Hannah Building, 608 West Allegan Street, Lansing, Michigan (contact Mr. Dan Dailey at 517-335-6610); at the DEQ's Southeast Michigan District Office, located at 38980 Seven Mile Road in Livonia, Michigan (contact Mr. Larry AuBuchon at 734-953-1401); and at the DEQ's Detroit Office located at 300 River Place, Suite 3600, Detroit, Michigan (Contact Ms. Jeanette Noechel at 313-392-6524). A copy of the license may be obtained for the cost of reproduction, by contacting the Hazardous Waste Program Section of the WMD, at 517-373-4630. Questions or comments concerning Dynecol should be directed to Mr. Dan Dailey at 517-335-6610.

FACT SHEET

Proposed State Operating License Renewal

Dynecol, Incorporated
Hazardous Waste Storage and Treatment Facility
MID 074 259 565

Monday, March 16, 1998

Department of Environmental Quality

DYNECOL, INCORPORATED
HAZARDOUS WASTE STORAGE AND TREATMENT FACILITY
DRAFT OPERATING LICENSE FACT SHEET

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DYNECOL, INCORPORATED
HAZARDOUS WASTE STORAGE AND TREATMENT FACILITY
DRAFT OPERATING LICENSE FACT SHEET

EXECUTIVE SUMMARY

The Department of Environmental Quality (DEQ) proposes to renew a license for Dynecol, Incorporated (Dynecol) to operate a hazardous waste treatment and storage facility located in Detroit, Michigan. Section I of this Fact Sheet describes the state and federal programs established to regulate hazardous waste and to permit hazardous waste treatment, storage, and disposal facilities (TSDFs).

The provisions of R 299.9518 and R 299.9519(11) of the Michigan Administrative Code (MAC) require the DEQ to renew a license for a hazardous waste TSDF unless: the facility has not been constructed in accordance with approved plans, applicable rules, or the conditions of an approved construction permit; the construction or operation of the facility presents a hazard to the public health or the environment; the applicant has not submitted sufficiently detailed or accurate information to enable the Director to make a reasonable judgment as to whether the license should be issued; non-compliance by the applicant with Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), the Part 111 administrative rules, or any condition of a construction permit or operating license; a determination that the licensed activity endangers human health or the environment; or the applicant fails in the application or during the construction permit or operating license issuance process to disclose fully all relevant facts or at any time misrepresents any relevant facts.

Based on the DEQ's review of Dynecol's license renewal application and numerous site inspections and audits, DEQ staff propose that the license be renewed because:

A. The facility will be constructed and operated in accordance with approved plans, applicable rules, and the draft storage and treatment facility operating license. Section II of this Fact Sheet describes the site, the facility design, and the DEQ's audit activities.

B. The facility does not present a hazard to human health or the environment at this time. This conclusion is based on environmental monitoring of air, groundwater, and effluent discharges conducted by Dynecol and audited by the DEQ, and on DEQ compliance inspections. Dynecol's compliance history is summarized in Attachment 1. Dynecol has generally been responsive in correcting the violations for which it has been cited.

C. The operating license renewal application submitted is sufficiently detailed to demonstrate that the facility's design and operation complies with or will be upgraded to meet the applicable technical standards. In addition to the standard and general facility conditions contained in all hazardous waste management facility operating licenses, the draft operating license contains conditions specific to Dynecol's proposed tank and container storage and tank treatment activities. An explanation of these conditions is included in Section II of this Fact Sheet. The portions of the operating license renewal application that describe how Dynecol will comply with certain regulations have been attached to the draft operating license as enforceable documents. Such attachments include, but are not limited to: the Waste Analysis Plan, Inspection Schedules, Personnel Training, the Contingency Plan, and the Closure Plan and Cost Estimate.

   Though we believe we have conducted a thorough review of Dynecol's renewal application, the DEQ seeks public input on the draft license renewal. Section V of this Fact Sheet describes the public participation process.

I. INTRODUCTION

Part 111 of Act 451 was passed by the Michigan Legislature to regulate the management of hazardous waste from generation to disposal. Likewise, Subtitle C of the Solid Waste Disposal Act, as amended, 42 USC 6901, et. seq. [commonly known as the Resource Conservation and Recovery Act of 1976 or RCRA], was passed by the U.S. Congress to regulate hazardous waste nationwide. RCRA was amended substantially by the Hazardous and Solid Waste Amendments of 1984 or HSWA. The HSWA and Part 111 of Act 451 require that facilities comply with stringent standards and require any facility seeking a permit to initiate corrective action for environmental releases from waste management units not otherwise regulated under RCRA or Part 111 of Act 451.

Both RCRA and Part 111 of Act 451 establish a permit system governing the treatment, storage and disposal of hazardous wastes. RCRA allows states to obtain authorization to issue a state hazardous waste permit instead of a federal permit. Effective October 15, 1996, the State of Michigan amended its Part 111 Administrative Rules to be equivalent to those under RCRA and portions of HSWA and applied to the United States Environmental Protection Agency (EPA) for authorization to administer all portions of the RCRA program except some of those portions remaining under HSWA.

Because Michigan is not authorized to issue permits which address all of the HSWA requirements, the DEQ and EPA will continue to jointly issue permits to hazardous waste facilities. The agencies will, to the extent possible, to coordinate the review and issuance of the permits. For example, the EPA has asked the DEQ to incorporate federal requirements for this facility in the state Part 111 operating license, including the addition of certain waste codes newly regulated pursuant to the federal carbamate waste rule. The duration of the Part 111 operating license will be ten years.

II. FACILITY DESCRIPTION

A. Facility Design and Construction

Dynecol was previously issued an operating license renewal for its hazardous waste container management and bulk treatment facility in 1990, by the Department of Natural Resources (DNR-now the DEQ) and EPA. Dynecol operates at 6520 Georgia Street in Detroit, Wayne County, Michigan as a commercial hazardous waste storage and treatment facility for acid, alkaline, and cyanide hazardous wastes, and metal and organic compounds that exhibit a characteristic of hazardous waste toxicity when tested using the toxicity characteristic leaching procedure (TCLP). Dynecol accepts hazardous wastes from off-site generators for treatment in tanks by detoxification of water solutions, stabilization of toxic constituents, fixation of constituents into a solid mass, and carbon adsorption. Spent carbon filters and solids filter cake from the waste treatment operations are sent off-site for disposal. Treated liquid effluent is discharged to the City of Detroit publicly owned treatment works under a permit from that authority.

The facility occupies approximately three and one half acres of land, and the active treatment portion is constructed to ensure segregation of incompatible wastes. The facility lies between Georgia Avenue to the north, industry to the west and south, and Sherwood Avenue to the east (please refer to the site maps in Attachment 2).

B. Current Hazardous Waste Management Operations

1. Licensed Hazardous Waste Storage and Treatment Operations

These storage and treatment operations were last licensed by the DNR and EPA in

1990. The draft hazardous waste facility operating license renewal authorizes Dynecol to store up to 20,000 gallons of hazardous waste in tanks and up to 41,000 gallons in containers, and to treat in tanks up to 144,000 gallons per day of the hazardous wastes listed in Attachment 3 to this Fact Sheet. These hazardous wastes include acid, alkaline, and cyanide bearing wastes that can be received in containers or in bulk tanker trucks. The facility is licensed to treat these wastes in tanks using chemical neutralization, oxidation, detoxification, solidification, and carbon adsorption. Recovered organics and carbon filters are disposed of off-site.

Hazardous waste liquids which have been treated in the primary tanks by one of the methods above are sent to secondary treatment tanks to remove additional solids prior to sending the liquids to the City of Detroit Publicly Owned Treatment Works for ultimate disposal. Sludges removed from the treated wastes are sent to a filter press which removes some of the additional liquid remaining. The liquid is sent back to the primary treatment tanks for further treatment, and the filter cake is sent off-site for disposal.

2. *Interim Status Carbamate Hazardous Waste Storage and Treatment Operations*

Dynecol conducts storage and treatment of carbamate hazardous wastes that are contained in other waste streams received at the facility. The carbamate waste codes became newly regulated as hazardous wastes on February 19, 1997. These wastes are contained in other hazardous wastes that are stored and/or treated at the facility. Since the carbamate hazardous waste management operations were in existence at the time the carbamate rule was promulgated, Dynecol qualified for interim status to store and treat these newly defined hazardous wastes. Hazardous waste treatment processes for carbamate waste codes (included in Attachment 3 to this Fact Sheet) are those specified above in this Fact Sheet for the licensed treatment operations at the facility. The carbamate hazardous waste codes have been included in the draft operating license renewal as part of this relicensing action.

C. Facility Upgrades

Time frames for completing new construction are specified in Part VII of the draft operating license. New construction includes upgrading effluent monitoring tanks 30 and 31 to meet hazardous waste requirements. In addition, Dynecol will close hazardous waste storage tanks 7 and 10 (about 22,000 gallons of capacity). After closure of those tanks, tanks 7 and 10 will be used for non-hazardous waste storage or product storage tanks and tank 1 (about 20,000 gallons of capacity) will be the only tank used for hazardous waste storage at the facility. The remaining 2,000 gallons of storage capacity generated by closing tanks 7 and 10 will be reused by Dynecol in its container management facility, up to the facility's maximum permitted storage design capacity.

D. Facility Specific License Conditions

Part VII of the draft operating license contains compliance schedules for the facility to assess tanks 27, 30, 31, CV1, and CV2 to enable the facility to certify tank construction and capability of storing and treating hazardous wastes, as required by Section 11123(3) of Act 451.

III. ENVIRONMENTAL IMPACT OF REGULATED UNITS

A. Wastes Stored and Treated

A list of the hazardous wastes that can be stored and treated by Dynecol is included as

Attachment 3. Dynecol stores and treats the wastes it receives from off-site generators. The hazardous waste storage and treatment facility operating license renewal will reauthorize Dynecol to store hazardous wastes in tanks and containers, and treat hazardous wastes in tanks. These wastes include hazardous wastes newly listed by the EPA under the federal carbamate waste code additions. After storing hazardous wastes for up to one year, Dynecol must either treat the wastes or send the wastes off-site for disposal or treatment at licensed hazardous waste disposal and/or treatment facilities.

B. Groundwater Monitoring

Dynecol will maintain a groundwater detection monitoring program for its facility to detect any new releases to groundwater. Please refer to Parts V and VI of the draft operating license for further information.

C. Corrective Actions

The objective of the corrective action program is to remedy releases of hazardous waste or hazardous constituents that threaten human health or the environment. Corrective actions are implemented in four phases: a RCRA Facility Assessment (RFA), a RCRA Facility Investigation (RFI), a corrective measures study (CMS), and corrective measures implementation (CMI). No Waste Management Units (WMUs) require corrective actions at the facility at this time. However, if new WMUs are identified at the facility, the need for corrective actions at those WMUs will be evaluated at the time of identification.

1. The RCRA Facility Assessment

The RFA typically includes a file search (FS), a preliminary review of the information gathered during the file search (PR), a visual site inspection (VSI), and a sampling visit (SV) (if necessary). The objectives of the RFA are: (1) To obtain a thorough understanding of the past and present facility waste management operations; (2) To identify all facility WMUs; (3) To use the FS, PR, and VSI information to assess the potential for a release of hazardous waste or hazardous constituents from each WMU; and (4) For each WMU, to determine if further actions are necessary to protect human health and the environment from a release.

2. The RCRA Facility Investigation

The RFI is used to further characterize and delineate the extent and impact of contaminants from WMUs identified during the RFA. Dynecol will propose investigations in an RFI Work Plan for approval by the DEQ, as required. After implementation of the approved work plan, Dynecol will submit an RFI Report which includes the data from the investigations, and Dynecol's recommendations for remediation of any contaminants.

3. The Corrective Measures Study

During the CMS and based on the information gathered during the RFI, Dynecol will select preliminary technologies for remediation of the facility. These technologies shall be subject to public review and DEQ approval prior to implementation by Dynecol.

4. Corrective Measures Implementation

During the CMI, Dynecol will implement the technologies for remediation that were approved in the corrective measures study phase of the corrective action process.

This is the beginning of actual site wide cleanup efforts.

5. *Interim Measures*

Interim Measures (IMs) are used at any stage of the corrective action process to take care of immediate threats to human health or the environment, or specific highly contaminated areas. IMs are also often integrated into the final cleanup remedy for a facility.

D. Air Monitoring

1. *Air Monitoring Requirements for Process Vents, Equipment Leaks, and Tanks and Containers*

HSWA, as required by Section 3004(n) of RCRA, provides for final standards limiting organic emissions from process vents and leaks from equipment. These requirements are codified in Title 40 of the Code of Federal Regulations (40 CFR) Parts 264.1030-264.1036 and 264.1050-264.1065. The regulated process vents are associated with the distillation and stripping operations that manage organic hazardous wastes at the facility. The regulated equipment leaks are those leaks from equipment that contain or contact the organic hazardous wastes stored or treated at the facility.

Dynecol is required to implement a leak detection and repair program for all equipment contacting the organic hazardous wastes. Equipment which must be inspected for signs of wear or leakage include: pumps, valves, flanges, compressors, and pressure relief devices. Dynecol is also required to meet all record keeping and reporting requirements of this regulation.

Implementation of the above inspection and monitoring requirements will enable the Department to determine the source of emissions, and ensure that Dynecol is in compliance with its Part 55, Air Pollution, of Act 451 permits. In addition, Dynecol is required to routinely monitor process vents on the treatment processes, and its storage tanks and containers that contact hazardous waste as part of its HSWA permit requirements. Any air emission or odor problems that occur should be immediately reported to the Air Quality Division by calling 313-953-1449 so that potential releases can be investigated.

2. *Ambient Air Monitoring Requirements*

Dynecol is and shall continue to implement an ambient air monitoring program for the facility to ensure that no air contaminants are leaving the site from treatment operations. The program is designed to monitor emissions of inorganic and organic compounds. Inorganic compounds monitored include total suspended particulates, and heavy metals like arsenic, lead, and chromium. Organic compounds monitored include several chlorinated hydrocarbons, benzene, ethylbenzene, toluene, and xylene. If an exceedence of the facility's permitted discharge limits is detected, the facility will be required to take corrective actions for that release to the air.

E. Effluent Monitoring

Dynecol must ensure that it meets the standards contained in its effluent discharge permit from the City of Detroit. The discharge permit allows Dynecol to discharge storm waters and treated process waste waters to the Detroit publicly owned treatment works for treatment prior to discharge to the Detroit River.

IV. FEDERAL REQUIREMENTS

The federal requirements for this facility not yet adopted by Michigan are those that pertain to regulation of newly identified waste codes, identified pursuant to the federal carbamate waste rule. However, the EPA Region 5 has asked Michigan to act in its behalf by incorporating these waste codes into the state operating license renewal for the facility. These newly identified waste codes are listed in Attachment 3 to this Fact Sheet.

V. PUBLIC PARTICIPATION

A. Public Comment Procedures

The purpose of public participation is to ensure that the interested public has knowledge of the DEQ proposed actions, and that it has the opportunity to comment on those actions. In addition, the process ensures that the DEQ has the opportunity to benefit from any information the public might have relevant to the proposed actions. Comments may be submitted in writing to Mr. Dan Dailey at the address listed in Subsection C below, between September 30, 1997, and November 14, 1997, or comments may be presented at the public hearing on the draft license. The public comment and public hearing procedures that will be followed are stated in the Michigan Administrative Code, Rules 299.9514 and 299.9515.

The public hearing on the draft operating license renewal will be held at 7:00 p.m., on Monday, November 3, 1997, in the Lunch Room of Cooper Elementary School located at 6836 Georgia in Detroit, Michigan. All speakers should register by 7:30 p.m., limit their oral presentation to five minutes, and if possible, submit two written copies of their presentation to the DEQ at the hearing. The public hearing location is accessible to handicapped persons. Handicappers or any person requiring specialized accommodation or assistance, such as an interpreter for the deaf, meeting materials in Braille, large print or an audio tape, should contact Mr. Dan Dailey at the address below, or at 517-335-6610 (TDD 517-335-4623) by October 20, 1997.

After the close of the public comment period, the DEQ will decide whether to issue the final license. Written comments submitted during the public comment period, including any comments provided during any public hearings, will be considered by the Director of the DEQ in the formulation of the final decision. Responses to written comments and statements will be included in the record supporting the final decision of the agencies. The final license decision will be communicated to the applicant, each person who submitted a written comment during the public comment period, persons providing written statements at any public hearing that may be held, and all persons on the facility mailing list.

B. Locations of Available Information

The administrative record for the hazardous waste facility operating license renewal is on file at the DEQ's Waste Management Division Office located on the first floor of the John A. Hannah Building in Lansing, Michigan (contact Mr. Dan Dailey at 517-335-6610). In addition, copies of the draft license and the Fact Sheet are available for review at the DEQ Detroit District Office located at 300 River Place, Suite 3600 in Detroit, Michigan (contact Ms. Jeanette Noechel at 313-392-6564), at the DEQ Southeast Michigan District Office located at 38980 Seven Mile Road in Livonia, Michigan (contact Mr. Larry AuBuchon at 734-953-1401), and at the Sociology and Economics Reference Department of the Main Branch of the Detroit Public Library, located at 5201 Woodward Avenue in Detroit, Michigan (contact the reference desk Tuesday through Saturday during regular business hours at 313-833-1440).

C. Contact Person

All Comments and requests regarding the operating license renewal, including requests for copies of the draft renewal and the Fact Sheet, should be addressed to:

Mr. Dan Dailey
Waste Management Division
Department of Environmental Quality
P.O. Box 30241
Lansing, Michigan 48909

Written comments concerning the draft operating license renewal should include the name and address of the writer, a concise statement of the basis for the comments, and the supporting relevant facts upon which the comments are based. Written comments must be postmarked no later than November 14, 1997.

DEQ

State of Michigan
Department of Environmental Quality
Hazardous Waste Treatment and Storage Facility Operating License

NAME OF LICENSEE: Dynecol, Inc.

NAME OF OWNER: Dynecol, Inc.

NAME OF OPERATOR: Dynecol, Inc.

NAME OF TITLEHOLDER OF LAND: Dynecol, Inc.

FACILITY NAME: Dynecol, Inc.

FACILITY LOCATION: 6520 Georgia Street, Detroit, MI 48211

EPA IDENTIFICATION NUMBER: MID 074 259 565 EFFECTIVE DATE: March 16, 1998

REAPPLICATION DATE: September 17, 2007 EXPIRATION DATE: March 16, 2008

AUTHORIZED ACTIVITIES

Pursuant to Part 111 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being §§324.11101 to 324.11152 of the Michigan Compiled Laws, and the hazardous waste management administrative rules (hereafter called the "rules") promulgated thereunder, being R 299.9101 et seq. of the Michigan Administrative Code, by the Michigan Department of Environmental Quality (MDEQ), an operating license (hereafter called the "license") is issued to Dynecol, Inc. (hereafter called the "licensee") to operate a hazardous waste facility located in at latitude 42° 23' 035" and longitude 083° 01' 056". The licensee is authorized to conduct the following hazardous waste management activities:

☒ STORAGE
- ☒ Container
- ☒ Tank
- ☐ Waste Pile
- ☐ Surface Impoundment
- ☐ Drip Pad

☒ TREATMENT
- ☐ Container
- ☒ Tank
- ☐ Surface Impoundment
- ☐ Incinerator
- ☐ Other:

☐ DISPOSAL
- ☐ Landfill
- ☐ Land Application
- ☐ Surface Impoundment

☐ POST CLOSURE
- ☐ Tank
- ☐ Surface Impoundment
- ☐ Landfill
- ☐ Waste Pile

APPLICABLE REGULATIONS AND LICENSE APPROVAL

The conditions of this license were developed in accordance with the applicable provisions of the rules, effective October 15, 1996. The licensee shall comply with all terms and conditions of this license. This license consists of the 31 pages of conditions attached hereto (including those in any Attachments 1 through 11) and the applicable regulations contained in R 299.9101 through R 299.11008 as specified in the license. For purposes of compliance with this license, applicable rules are those which are in effect on the date of issuance of this license in accordance with R 299.9521(3)(a).

This license is based on the information in the license application submitted on January 4, 1995 and any subsequent amendments (hereafter referred to as "the application"). Pursuant to R 299.9519(11)(c), the license may be revoked if the licensee fails, in the application or during the license issuance process, to disclose fully all relevant facts or, at any time, misrepresents any relevant facts. As specified in R 299.9519(1), the facility shall be constructed, operated, and maintained in accordance with Part 111 of Act 451, the rules, and this license.

This license is effective on the date of issuance and shall remain in effect for 10 years from the date of issuance, unless revoked pursuant to R 299.9519 or continued in effect as provided by the Michigan Administrative Procedures Act, 1969 PA 306, as amended (Act 306).

Issued this 16th day of March 1998

by Jim Sygo

Jim Sygo, Chief
Waste Management Division

Dynecol, Inc.: MID 074 259 565

HAZARDOUS WASTE TREATMENT AND STORAGE FACILITY OPERATING LICENSE

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PART I: STANDARD CONDITIONS

A. TERMINOLOGY

Throughout this license, "Act 451" means Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and "rules" means the hazardous waste management administrative rules promulgated pursuant to Part 111 of Act 451, as in effect on the date of issuance of this license. The term "Waste Management Division" means the division within the Michigan Department of Environmental Quality (MDEQ) responsible for administering Part 111 of Act 451 and the rules. Throughout this license, "Director" means the Director of the MDEQ or the Director's duly authorized designee such as the Chief of the Waste Management Division of the MDEQ.

B. EFFECT OF LICENSE

Except as otherwise provided by law, any treatment, storage, or disposal of hazardous waste not specifically authorized in this license is prohibited. Issuance of this license does not convey property rights of any sort or any exclusive privilege {R 299.9516(7) and 40 Code of Federal Regulations (CFR) §270.30(g), which is adopted by reference (ABR) in R 299.11003}; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of federal, state, or local law or regulations {R 299.9516(8)}; nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law. Compliance with the terms of this license does not constitute a warranty or representation of any kind by the MDEQ, nor does the MDEQ intend that compliance with this license constitutes a defense to any order issued or any action brought under Act 451 and any other applicable state statute and Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) {42 USC 9606(a)}, the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and its rules, and any other applicable federal statute. The licensee, however, does not represent that it will not argue that compliance with the terms of this license may be a defense to such future regulatory actions. Each attachment to this license is a part of, and is incorporated into, this license and is deemed an enforceable part of the license.

C. LICENSE ACTIONS

This license may be modified or revoked in accordance with R 299.9519. The filing of a request for a license modification or revocation, or the notification of planned changes or anticipated noncompliance on the part of the licensee does not stay the applicability or enforceability of any license condition. {R 299.9519, R 299.9521(1)(a) and 40 CFR §270.30(f), which is ABR in R 299.11003}

D. SEVERABILITY

The provisions of this license are severable, and if any provision of this license, or the application of any provision of this license to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this license shall not be affected thereby.

E. RESPONSIBILITIES

1. The licensee shall comply with Part 111 of Act 451, the rules, and all conditions of this license, except to the extent authorized by the MDEQ pursuant to the terms of an emergency operating license, including, but not limited to: {R 299.9521(1)(a) and (3)(a) and (b), and 40 CFR §270.30(a), which is ABR in R 299.11003}

(a) Duty to Reapply. If the licensee wishes to continue an activity regulated by this license after the expiration date of this license, the licensee shall submit a complete application for a new license to the Chief of the Waste Management Division at least 180 days before this license expires, March 16, 2008, unless an extension is granted pursuant to R 299.9510(5). {R 299.9521(1)(a) and 7(c) and (3)(a), and 40 CFR §270.30(b), which is ABR in R 299.11003}

(b) License Expiration. To the extent consistent with Section 91(2) of Act 306, this license and all conditions herein will remain in effect beyond the license expiration date if the licensee has submitted a timely, complete application and the Chief of the Waste Management Division has not issued a new license. {R 299.9521(1)(c) and (3)(a)}

(c) Inspection and Entry. The licensee shall allow the Chief of the Waste Management Division, or any authorized representative, including, but not limited to, a contractor, upon the presentation of credentials and other documents as may be required by law, to sample or monitor, at reasonable times, any substances or parameters at any location for the purpose of determining:

(i) Whether the management of hazardous waste may present an imminent and substantial hazard to the health of persons or to the natural resources, or is endangering or causing danger to public health or the environment;

(ii) Whether cause exists for an enforcement action, license revocation, license modification, denial of a license renewal application, or to determine compliance with this license.

If samples are taken for analysis, duplicate samples and a copy of the analytical results shall be furnished to the licensee upon request.

{Sections 11146(1) and (2) and 11148(1) of Act 451, R 299.9521(1)(a), and 40 CFR §270.30(i), which is ABR in R 299.11003}

(d) Specific Monitoring Requirements. The Chief of the Waste Management Division reserves authority to require specific monitoring for hazardous wastes or hazardous waste constituents, in addition to those requirements detailed in this license, if the Chief of the Waste Management Division finds that additional monitoring is needed to demonstrate compliance with this license, Part 111 of Act 451, the rules, and any other applicable laws or rules. {R 299.9611(5)}

(e) Notice of Facility Modifications. The licensee shall give notice to the Chief of the Waste Management Division as soon as possible prior to any planned physical alterations or additions to the licensed facility. {R 299.9519(1)}

(f) License Amendments for Facility Modifications. The licensee shall request and obtain a license amendment prior to undertaking any modifications to the facility. Except as otherwise authorized by Part 111 of Act 451 and the rules, the licensee shall obtain a construction permit prior to expanding, enlarging, or altering the facility. {R 299.9501(1), R 299.9519, and R 299.9521(1)(b)(i)}

(g) Submission of Statements and Certifications for Construction and Capability. The licensee shall submit to the Chief of the Waste Management Division, by certified mail or hand delivery, a letter signed by the licensee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the license and approved plans and the certifications of construction and capability required pursuant to Section 11123(3) of Act 451. The licensee shall not treat, store, or dispose of hazardous waste in the modified portion of the facility until one of the following conditions is met:

(i) The Chief of the Waste Management Division, or the authorized representative, has inspected the modified facility and finds it is in compliance with the conditions of the license;

(ii) If within 15 days of the date of submission of the letter in Condition I.E.1.(g) of this license, the licensee has not received notice from the Chief of the Waste Management Division of his or her intent to inspect, prior inspection is waived, and the licensee may commence treatment, storage, or disposal of hazardous waste.

{R 299.9521(1)(b)(ii)}

(h) Anticipated Noncompliance. The licensee shall give advance notice to the Chief of the Waste Management Division as soon as the licensee becomes aware of any planned changes or activity in the licensed facility which may result in noncompliance with license requirements. {R 299.9521(1)(a) and 40 CFR §270.30(l)(2), which is ABR in R 299.11003}

(i) Transfer of License. The licensee shall obtain the approval of the Chief of the Waste Management Division, by a modification to the license, prior to transferring ownership or operation of the facility to another person. In addition, the licensee shall comply with the requirements of R 299.9605 when transferring the ownership of the facility. The new owner/operator shall not accept hazardous waste at the facility unless the license modification has been issued by the Chief of the Waste Management Division. {R 299.9522}

(j) Other Information. Whenever the licensee becomes aware that he/she failed to submit any relevant facts in the license application, or submitted incorrect information in a license application or in any report to the Chief of the Waste Management Division, the licensee shall promptly submit such facts or information. {R 299.9521(1)(a) and 40 CFR §270.30(l)(11), which is ABR in R 299.11003}

2. The licensee shall comply with the requirements of 40 CFR §270.30(c)-(e) and (h)-(j), including those requirements pertaining to:

(a) Need to halt or reduce activity not a defense,

(b) Duty to mitigate,

(c) Proper operation and maintenance,

(d) Duty to provide information,

(e) Inspection and entry,

(f) Monitoring and records.

{R 299.9521(1)(a) and 40 CFR §270.30(c)-(e) and (h)-(j), which are ABR in R 299.11003}

3. Any license noncompliance, except to the extent authorized by the MDEQ pursuant to the terms of an emergency operating license, constitutes a violation of Part 111 of Act 451 and is grounds for enforcement action, license revocation, license modification, or denial of a license renewal application. {R 299.9521(1)(a) and 40 CFR §270.30(a), which is ABR in R 299.11003}

F. **SIGNATORY REQUIREMENT**

The licensee shall ensure that all reports required by this license or other information requested by the Chief of the Waste Management Division, or authorized representative, are signed and certified in accordance with R 299.9610(4), by a responsible corporate officer, as defined in 40 CFR §270.11, which is ABR in R 299.11003. {R 299.9521(1)(a) and 40 CFR §270.30(k), which is ABR in R 299.11003}

G. **SUBMITTAL DUE DATES AND DEADLINES**

When the due date or deadline for submission of applications, reports, records, and monitoring results required under this license falls on a weekend or legal state holiday, the due date or deadline shall be extended to the next regular business day, and reports, records, and monitoring results shall be considered submitted on a timely basis if submitted by the next regular business day. This extension does not apply to the submittal due date or deadline for financial mechanisms, and associated renewals, replacements, and extensions of financial mechanisms required under this license. The licensee may request extension of the due dates or deadlines for submittals required under this license. The licensee shall submit such requests at least five business days prior to the existing due date or deadline for review and approval by the Chief of the Waste Management Division. Written extension requests shall include justification for each extension. {R 299.9521(3)(a)}

PART II: GENERAL OPERATING CONDITIONS

A. DESIGN AND OPERATION OF FACILITY

The licensee shall maintain and operate the facility to prevent the possibility of a fire, explosion, or any sudden or non-sudden release of hazardous waste or hazardous waste constituents to the environment, including air, soil, or waters of the State which could threaten human health or welfare or the environment. {R 299.9602, R 299.9606, R 299.9607, and 40 CFR §§264.31 and 264.51, which are ABR in R 299.11003}

B. REQUIRED NOTICE

1. The licensee shall notify the Chief of the Waste Management Division in writing at least four weeks in advance of the date the licensee expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste from the same foreign source is not required. When receiving such hazardous waste, the licensee shall comply with applicable laws, including, but not limited to, any treaties or other agreements entered into between the country in which the foreign source is located and the United States. {R 299.9605(1) and 40 CFR §264.12(a), which is ABR in R 299.11003}

2. When the licensee is to receive hazardous waste from an off-site source (except where the licensee is also the generator), he must inform the generator in writing that he has the appropriate license for, and will accept, the waste the generator is shipping. The licensee must keep a copy of this written notice as part of the operating record (see Condition II.L.1. of this license). {R 299.9605(1) and 40 CFR §264.12(b), which is ABR in R 299.11003}

C. GENERAL WASTE ANALYSIS

The licensee shall ensure that any waste stored, treated, or disposed at the facility has been properly characterized pursuant to R 299.9302, and comply with the procedures described in the attached waste analysis plan, Attachment 1 of this license. {R 299.9605(1), and 40 CFR §264.13, which is ABR in R 299.11003}

D. QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

The licensee shall ensure that all samples collected for the purposes of waste characterization and environmental monitoring are collected, transported, analyzed, stored, and disposed of by trained and qualified individuals in accordance with their Quality Assurance/Quality Control (QA/QC) Plan. The QA/QC Plan shall at a minimum include the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," United States Environmental Protection Agency (U.S. EPA) Publication SW-846, Third Edition, Chapter 1, and its Updates I (July 1992), II (September 1994), IIA (August 1993), and IIB (January 1995), and any facility or contractor's written standard operating procedures (SOPs) which are equivalent or more stringent than SW-846, Chapter 1. The licensee shall make the written QA/QC Plan available to the Chief of the Waste Management Division or an authorized representative upon request. {R 299.9521(3)(a) and (b) and R 299.9611(2)}

E. SECURITY

The licensee shall comply with the security requirements of R 299.9605(1) and 40 CFR §264.14, which is ABR in R 299.11003.

F. **GENERAL INSPECTION REQUIREMENTS**

1. The licensee shall inspect the hazardous waste management facility, remedy any deterioration or malfunction of equipment or structures, and document inspections and remedies in accordance with the attached inspection schedule, Attachment 2 of this license, and the provisions of 40 CFR §264.15 which is ABR in R 299.11003. {R 299.9605(1)}

2. The licensee shall develop and implement a procedure to ensure compliance with the requirements of R 299.9605(2).

G. **PERSONNEL TRAINING**

The licensee shall conduct personnel training as required by R 299.9605(1) and 40 CFR §264.16, which is ABR in R 299.11003. This training program shall, at a minimum, cover all items in the attached outline, Attachment 3 of this license. The licensee shall maintain training documents and records as required by R 299.9605 and 40 CFR §264.16(d), which is ABR in R 299.11003.

H. **PREPAREDNESS AND PREVENTION**

The licensee shall comply with the preparedness and prevention requirements of R 299.9606, including, but not limited to, required equipment, testing, and maintenance of equipment, access to communications and alarm systems, required aisle space, and arrangements with emergency response teams. {R 299.9606 and 40 CFR Part 264, Subpart C, which is ABR in R 299.11003}

I. **CONTINGENCY PLAN**

The licensee shall comply with the contingency plan requirements of R 299.9607. The contingency plan, Attachment 4 of this license, and the prescribed emergency procedures shall be immediately implemented by the licensee whenever there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment, or if the licensee has knowledge that a spill has reached surface water or groundwater. {R 299.9607 and 40 CFR Part 264, Subpart D, which is ABR in R 299.11003}

J. **DUTY TO MITIGATE**

Upon notification from the Chief of the Waste Management Division or his or her designee that an activity at the facility may present an imminent and substantial endangerment to human health or the environment, the licensee shall immediately halt such activity and conduct other activities as required by the Chief of the Waste Management Division to eliminate the said endangerment. The licensee shall not resume the halted activity without the prior written approval from the Chief of the Waste Management Division. {Section 11148 of Act 451 and R 299.9521(3)(b)}

K. **MANIFEST SYSTEM**

1. The licensee shall comply with the manifest requirements of R 299.9304, R 299.9305, and R 299.9608.

2. The licensee shall follow the MDEQ, Waste Management Division, rejected load procedures included in waste analysis plan, Attachment 1 of this license.

L. **RECORDKEEPING AND REPORTING**

1. Operating Record. The licensee shall maintain a written operating record at the facility, until closure of the facility. {R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, which are ABR in R 299.11003}

2. Biennial Report. The licensee shall comply with the biennial report requirements of R 299.9610. A single copy of the biennial report shall be submitted to the U.S. EPA, Region 5 Administrator by March 1 of each even numbered year. {R 299.9521(1)(a) and R 299.9610 and 40 CFR §270.30(l)(9), which is ABR in R 299.11003}

3. Environmental Monitoring Reports. The licensee shall submit the results of all environmental monitoring required by this license, except air monitoring, in the form of an Environmental Monitoring Report to the Chief of the Waste Management Division within 60 days of sample collection. The licensee shall submit air monitoring results to the Wayne County Department of Environment, Air Quality Management Division. {R 299.9521(1)(a) and 40 CFR §270.30(l)(4), which is ABR in R 299.11003}

4. Environmental Monitoring Data Availability. The licensee shall provide environmental monitoring information or data which it generates to any local public official requesting such information or data. Such information or data shall be made available on the same day the licensee forwards this information to the Chief of the Waste Management Division. {R 299.9521(3)(b)}

5. Additional Environmental Sampling and Analysis. If the licensee conducts any additional environmental sampling or analysis beyond that required by this license, the results of such sampling or analysis shall be reported in accordance with Condition II.L.3. of this license. Such increased frequency shall also be indicated in the Environmental Monitoring Report. {R 299.9521(1)(a) and 40 CFR §270.30(l)(4), which is ABR in R 299.11003}

6. Reporting of Noncompliance. The licensee shall immediately report to the Chief of the Waste Management Division any noncompliance with the license that may endanger human health or the environment. The licensee shall fulfill this reporting requirement by doing both of the following:

   (a) The licensee shall immediately contact the Chief of the Waste Management Division at 517-373-2730, if the noncompliance occurs during the period 8:00 a.m. to 5:00 p.m., Monday through Friday, except State holidays, or by calling the Department of Environmental Quality Pollution Emergency Alerting System (PEAS) telephone number 1-800-292-4706 during all other times. This report shall include the following:

      (i) Information concerning the release or discharge of any hazardous waste or hazardous waste constituent which may endanger public drinking water supplies or the environment;

      (ii) Information concerning the fire, explosion, or other release or discharge of any hazardous waste or hazardous waste constituent which could threaten human health or the environment or a spill that has reached surface water or groundwater;

      (iii) A description of the occurrence and its cause, including all of the information outlined in R 299.9607(2)(a)-(i).

(b) The licensee shall also follow-up the verbal report by providing a written report to the Chief of the Waste Management Division within five days of the time the licensee becomes aware of the circumstances. The written report shall contain all of the information in Condition II.L.6.(a)(i)-(iii) of this license along with a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and when those activities occurred or will occur. The licensee need not comply with the five-day written notice requirement if the Chief of the Waste Management Division waives the requirement and the licensee submits a written report containing this information within 15 days of the time the licensee becomes aware of the circumstances.

{R 299.9521(1)(a) and R 299.9607 and 40 CFR §270.30(l)(10), which is ABR in R 299.11003}

7. Other Noncompliance. The licensee shall report all other instances of noncompliance with this license, Part 111 of Act 451, the rules, and any other applicable environmental laws or rules that apply to the licensed facility, at the time monitoring reports required by this license are submitted or within 30 days, whichever is sooner. The reports shall contain the information listed in Condition I.L.6. of this license. {R 299.9521(1)(a) and 40 CFR §270.30(l)(10), which is ABR in R 299.11003}

8. Form Modification. The licensee may make minor modifications to the forms contained in the attachments to this license. The modifications may include changing the format, updating existing references and information, adding necessary information, and changing certification and notification information in accordance with Part 111 of Act 451 and its rules, and RCRA and its regulations. The licensee shall submit the modifications to the Chief of the Waste Management Division prior to implementing the use of the modified form(s). If the Chief of the Waste Management Division does not reject or require revision of the modified form(s) within 14 days of receipt, the licensee shall implement use of the modified form(s) and the form(s) shall be incorporated into this license as a replacement for the existing form(s).

M. CLOSURE

The licensee shall comply with the closure requirements of R 299.9613, including, but not limited to, performance standards, amendment of closure plans, notification of closure, time allowed for closure, disposal or decontamination of equipment, and certification of closure. The licensee shall close the facility in accordance with the closure plan, Attachment 5 of this license, all other applicable requirements of this license, and all other applicable laws. The licensee shall submit a proposed amended copy of the closure plan to the Chief of the Waste Management Division at the same time such a license modification is requested. {R 299.9613 and 40 CFR Part 264, Subpart G, except 40 CFR §§264.112(d)(1), 264.115, and 264.120, which is ABR in R 299.11003}

N. COST ESTIMATE FOR FACILITY CLOSURE

1. At the time of issuance of this license, the closure cost estimate is $176,976.

2. The licensee shall comply with the closure cost estimate requirements of R 299.9702, including, but not limited to, adjustment of the closure cost estimate and maintenance of the latest cost estimate at the facility. {R 299.9702 and 40 CFR §264.142, which is ABR in R 299.11003}.

O. **FINANCIAL ASSURANCE FOR FACILITY CLOSURE**

1. The licensee shall provide and continuously maintain closure financial assurance in accordance with R 299.9703 in an amount at least equal to the cost estimate required by Condition II.N. of this license. The licensee shall submit all proposed changes in the mechanism(s), other than renewals, extensions, or increases in the amount of assurance, to the Chief of the Waste Management Division and obtain his approval prior to implementation. The licensee shall provide the Chief of the Waste Management Division with a signed original of all revisions and renewals within 60 days after such revision or renewal, by the applicable deadlines specified in R 299.9704 through R 299.9709, and prior to the anniversary of the establishment of the financial mechanism(s) provided to satisfy the requirements of this condition.

2. Whenever the current closure cost estimate increases to an amount greater than the current amount of the associated financial mechanism, the licensee shall, within 60 days after the increase, either increase the amount of the mechanism to an amount at least equal to the increased closure cost estimate, or provide an additional financial mechanism approved by the Chief of the Waste Management Division for an amount at least equal to the difference between the current amount of financial assurance and the increased closure cost estimate. Evidence of such increased financial assurance must be submitted to the Chief of the Waste Management Division during the 60-day period.

P. **LIABILITY REQUIREMENTS**

The licensee shall continuously maintain liability coverage for sudden and accidental occurrences, as required by R 299.9710, except as otherwise allowed by that rule. The licensee shall submit to the Chief of the Waste Management Division a signed original pollution liability insurance amendatory endorsement or other financial mechanism approved by the Chief of the Waste Management Division prior to the anniversary date of the establishment of the mechanism(s) used to satisfy the requirements of this condition. In the case of the financial test or corporate guarantee, the licensee shall submit the updated financial information within 90 days of the close of each succeeding fiscal year.

Q. **WASTE MINIMIZATION**

The licensee shall certify at least annually that the licensee has a program in place to reduce the volume and toxicity of hazardous waste that the licensee generates to the degree determined by the licensee to be economically practicable; and the proposed method of treatment, storage, or disposal is the practicable method currently available to the licensee which minimizes the present and future threat to human health and the environment. The certification shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility. {R 299.9609(1)(a), 40 CFR §264.73(b)(9), which is ABR in R 299.11003, and Section 3005(h) of RCRA, 42 U.S.C. Section 6925(h)}

R. **LAND DISPOSAL RESTRICTIONS**

The licensee shall comply with all of the requirements of 40 CFR Part 268. {R 299.9627 and 40 CFR Part 268, which is ABR in R 299.11003}

S. **AIR EMISSION STANDARDS**

The licensee shall notify the Chief of the Waste Management Division of any waste management units which become subject to the requirements of 40 CFR Part 264, Subparts AA and BB, within 30 days of the start of the regulated activity. {R 299.9630, R 299.9631, and 40 CFR Part 264, Subparts AA and BB, which are ABR in R 299.11003}

T. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The licensee shall maintain at the facility the following documents and amendments required by this license, until closure/post-closure is completed, certified by an independent registered professional engineer, and the facility is released from financial assurance requirements for closure/post-closure by the Director:

1. Waste analysis plan, including QA/QC plan.
2. Inspection schedules.
3. Personnel training documents and records.
4. Contingency plan.
5. Closure plan.
6. Cost estimates for facility closure and copies of related financial assurance documents.
7. Operating record.
8. Site security plan.
9. Facility engineering plans and specifications.
10. Recordkeeping procedures.
11. Environmental monitoring plans, including sampling and analysis plans and QA/QC plans.
12. Environmental monitoring data and statistical records.
13. Preventative procedures (personnel protection plan).

{R 299.9521(3)(a)}

PART III: CONTAINER STORAGE CONDITIONS

A. COVERAGE OF LICENSE

1. The hazardous waste container storage areas designated as the Container Management Facility and the Filter Press area at the facility and shown on Drawings B.3, G.1, F.1, FD-101, 5, 6, and 6A are covered by this license. Any expansion or enlargement beyond the facility boundary shown on Drawing B.3, G.1, F.1 or beyond the 39,000-gallon or 41,000-gallon storage design capacity, as specified in Condition III.B below, requires a construction permit from the Chief of the Waste Management Division. {R 299.9521(1)(b)}

2. Drawings B.3, G.1, F.1, FD-101, 5, 6, and 6A are incorporated into this license as part of Attachment 6.

B. WASTE IDENTIFICATION AND QUANTITY

1. Until the closure certifications of Tanks 7 and 10, which are required pursuant to Conditions IV.A and II.M of this license, have been accepted by the Chief of the Waste Management Division, the licensee may store no more than a total volume of 39,000 gallons of the hazardous wastes listed in Attachment 1 in 55-gallon drums and smaller capacity containers, and 500-gallon totes, in the Container Management Facility, subject to the terms of this license. In addition, 85-gallon over-pack/recovery drums may be stored if they contain no more than 55-gallons of hazardous waste. {R 299.9521(2)(d)}

2. After the closure certifications of Tanks 7 and 10 have been accepted by the Chief of the Waste Management Division pursuant to Conditions IV.A and II.M of this license, the licensee may store no more than a total volume of 41,000 gallons of the hazardous wastes listed in Attachment 1 in 55-gallon drums and smaller capacity containers, and in 500-gallon portable tanks (totes) and smaller capacity totes, in the Hazardous Waste Container Storage Area at the facility, subject to the terms of this license. In addition, 85-gallon over-pack/recovery drums may be stored if they contain no more than 55-gallons of hazardous waste. {R 299.9521(2)(d)}

3. The licensee is prohibited from bulking (mixing, combining or commingling wastes pumped from containers into the cargo tanks of transport vehicles) or transferring, except as provided in Condition III.C, any containerized hazardous waste designated as being "acceptable for storage only" in Attachment 1 of this license.

4. The licensee may store de-watered filter press sludge, generated from the treatment of the hazardous wastes listed in Attachment 1 of this license, in a maximum of three roll-off box containers holding no more than a combined total volume of 60 cubic yards of hazardous waste in the Filter Press Building, subject to the terms of this license.

C. CONDITION OF CONTAINERS

If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the licensee shall transfer the hazardous waste from such container to a container that is in good condition, or otherwise manage the waste in compliance with the conditions of this license. {R 299.9614(1)(a) and 40 CFR §264.171, which is ABR in R 299.11003}

D. COMPATIBILITY OF WASTE WITH CONTAINERS

The licensee shall assure that the ability of the containers to contain the waste is not impaired. {R 299.9614 and 40 CFR §264.172, which is ABR in R 299.11003}

E. MANAGEMENT OF CONTAINERS

1. The licensee shall keep all containers holding hazardous waste closed during storage except when it is necessary to add or remove waste, and shall not open, handle, or store containers in a manner which may rupture the containers or cause them to leak. {R 299.9614 and 40 CFR §264.173, which is ABR in R 299.11003}

2. The licensee shall ensure that each container of hazardous waste in the container storage area is labeled or clearly marked with the words "Hazardous Waste" and the hazardous waste number, and the date it was accepted for storage so that compliance with the one-year storage limit can be assessed. The labels on each container shall be clearly visible for inspection. {R 299.9306(1)(b), R 299.9521(3)(b), R 299.9614, R 299.9627, and 40 CFR §268.50(a)(2)(i), which is ABR in R 299.11003}

3. The licensee shall only place containers into the hazardous waste container storage areas referenced in Condition III.A of this license in accordance with the configuration shown in Drawing 6A in Attachment 6 of this license or an alternate configuration approved by the Chief of the Waste Management Division. {R 299.9521(3)(b)}

4. The licensee shall not stack containers of hazardous waste greater than two high. {R 299.9521(3)(b)}

5. The licensee shall not store any container of hazardous waste for more than one year in the container storage areas referenced in Condition III.A of this license prior to treatment of its contents on site or shipment off-site to another appropriately licensed hazardous waste treatment or disposal facility, except as approved by the Chief of the Waste Management Division based on a petition demonstrating that such storage is solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal. {R 299.9521(3)(b), R 299.9627, and 40 CFR Part 268, which is ABR in R 299.11003}

F. CONTAINMENT

The licensee shall operate and maintain the containment system in accordance with the requirements of R 299.9614 and 40 CFR §264.175, which is ABR in R 299.11003, and the attached plans and specifications in Attachment 6 of this license.

G. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

1. The licensee shall not locate containers holding ignitable or reactive wastes within 15 meters (50 feet) of the facility's property line. {R 299.9614 and 40 CFR §264.176, which is ABR in R 299.11003}

2. The licensee shall prevent the ignition or reaction of ignitable or reactive wastes by following the procedures specified in Attachment 7 of this license. {R 299.9605 and 40 CFR §264.17(a), which is ABR in R 299.11003}

3. The licensee shall document compliance with Condition III.G.2 of this license and place this documentation in the operating record (Condition II.L.1. of this license). {R 299.9605 and 40 CFR §264.17(c), which is ABR in R 299.11003}

H. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

1. The licensee is prohibited from placing incompatible wastes or incompatible wastes and materials in the same container. {R 299.9521(2)(d) and (3)(b)}

2. The licensee shall prevent the placement of hazardous waste in an unwashed container that previously held an incompatible waste or material. {R 299.9614 and 40 CFR §264.177(b), which is ABR in R 299.11003}

3. The licensee shall separate containers of incompatible wastes as indicated in the procedures contained in Attachment 7 of this license. {R 299.9614 and 40 CFR §264.177(c), which is ABR in R 299.11003.}

4. The licensee shall document compliance with Conditions III.H.1 and III.H.2 of this license and place this documentation in the operating record (Condition II.L.1. of this license). {R 299.9605 and 40 CFR §264.17(c), which is ABR in R 299.11003}

I. DISPOSITION OF ACCUMULATED LIQUIDS

The licensee shall remove all liquids accumulated in the containment system within 24 hours of detection and manage the liquids in accordance with the requirements of Part 111 of Act 451 and the rules, as specified in Attachment 7 of this license. {R 299.9521(3)(b), R 299.9614(1)(a) and 40 CFR §264.175(b)(5), which is ABR in R 299.11003}

J. COMPLIANCE WITH AIR EMISSION AND WASTE MANAGEMENT REQUIREMENTS FOR STORAGE IN CONTAINERS

The licensee shall comply with all air emission and waste management requirements for hazardous waste storage containers contained in permits issued by Wayne County Health Department, Air Pollution Control Division. Failure to abide by the above referenced permits shall constitute a violation of this license. {R 299.9602(1)(b)}

PART IV: TANK SYSTEM STORAGE AND TREATMENT CONDITIONS

A. COVERAGE OF LICENSE

1. The hazardous waste tank system storage and treatment areas at the facility shown on Drawings B.3, G.1, F.1, C-101, S-1 through S-9, A-1, 1, 1A, 2, 3, 4, 5, DFT-900541.02-1, and D-29019-2, are covered by this license. Any expansion or enlargement beyond the facility boundary shown on the Drawings specified in this Condition, above, or beyond the tank system storage design capacities authorized in Conditions IV.B.1 and IV.B.2 of this license or the 144,000 gallons per 24-hour day treatment design capacity requires a construction permit from the Chief of the Waste Management Division. {R 299.9521(1)(b)}

2. The Drawings specified in Condition IV.A of this license are incorporated into this license as Attachment 6.

B. WASTE IDENTIFICATION AND QUANTITY

1. Until closure of Tanks 7 and 10, as required by Condition IV.B.3 of this license, the licensee may store no more than a total volume of 22,000 gallons of the hazardous wastes listed in Attachment 1 in the tank systems identified as Tanks 7 and 10 in Attachment 6, subject to the terms of this license. {R 299.9521(2)(d)}

2. After closure of Tanks 7 and 10, as required by Condition IV.B.2 of this license, the licensee may store no more than a total volume of 20,000 gallons of the hazardous wastes listed in Attachment 1 in the tank system identified as Tank 1 in Attachment 6, subject to the terms of this license. {R 299.9521(2)(d)}

3. The licensee shall complete closure of Tanks 7 and 10 in accordance with Condition II.M and Attachment 5 of this license prior to conducting the hazardous waste tank storage and processing activities referenced in section D-2A(i) of Attachment 7 to this license.

C. WASTE TREATMENT CAPACITY AND METHODS

1. The licensee may treat no more than a total volume of 144,000 gallons per 24-hour day of the hazardous wastes listed in Attachment 1 in the tank systems identified as Tanks 2, 3, 4, and 27 (primary treatment), Tanks 18, 19, 20, and 21 (secondary treatment), Tanks CV1 and CV2 (final effluent polishing), and Tanks 30 and 31 (effluent holding and quality control) in Attachment 7 and Drawing B.1, G.1, F.1 in Attachment 6, subject to the terms of this license. {R 299.9521(2)(d) and (3)(a) and (b)}

2. The licensee may operate the treatment system 24 hours per day, 7 days per week, for no more than 312 days per year, or 7,488 hours per year. {R 299.9521(3)(b)}

D. DESIGN, CONTAINMENT AND ASSESSMENT OF TANK SYSTEMS

The licensee shall operate and maintain all tank systems in accordance with the applicable requirements of R 299.9615 and 40 CFR §§ 264.193 and 264.194, which are ABR in R 299.11003, and the attached plans and specifications in Attachment 6 of this license.

E. MANAGEMENT OF TANK SYSTEMS

1. The licensee shall manage the tank systems in accordance with the requirements of R 299.9615 and 40 CFR §§264.194 and 264.196 which are ABR in R 299.11003, and the spill and overfill prevention procedures specified in Attachment 7 of this license.

2. The licensee shall conduct the treatment of hazardous wastes in accordance with the methods and procedures specified in Attachment 7 of this license. {R 299.9633}]

3. The licensee shall operate and maintain all tanks in compliance with the requirements of R 29.410 to R 29.4504 pursuant to the provisions of the Fire Prevention Act, 1941 PA 207, as amended. {R 299.9615}

4. The licensee shall label tank systems in accordance with the provisions of National Fire Protection Association (NFPA) Standard No. 704. {R 299.9615(5)}

5. The licensee shall clearly mark each tank containing land disposal restricted waste with a description of its contents, the quantity of each hazardous waste received, and the date each period of accumulation begins, or record such information for each tank system in the facility operating record. {R 299.9627 and 40 CFR §268.50(a)(2)(ii), which is ABR in R 299.11003}

6. The licensee shall not store any hazardous waste in the tanks referenced in Condition IV.A of this license for more than one year prior to treatment of those hazardous wastes on-site or shipment off-site to another appropriately licensed hazardous waste treatment or disposal facility. The licensee may store hazardous waste in a tank for more than the one-year period based upon a petition approved by the Chief of the Waste Management Division demonstrating that such storage is solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal. {R 299.9521(3)(b), R 299.9627, and 40 CFR Part 268, which is ABR in R 299.11003}

F. PROHIBITION ON STORING OR TREATING IGNITABLE OR REACTIVE WASTES OR MATERIALS

The licensee is prohibited from storing or treating ignitable or reactive wastes or materials in tank systems at the facility.

G. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

1. The licensee shall not place incompatible wastes or incompatible wastes and materials, in the same tank system or place hazardous waste in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless the procedures specified in Attachment 7 of this license are followed, as required by R 299.9615 and 40 CFR §264.17(b), which is ABR in R 299.11003. {R 299.9615 and 40 CFR §264.199, which is ABR in R 299.11003}

2. The licensee shall document compliance with Condition IV.G.1 of this license, as required by R 299.9605 and 40 CFR §264.17(c), and place this documentation in the operating record. The provisions of 40 CFR §264.17(c) are ABR in R 299.11003. {R 299.9609 and 40 CFR §264.73(b)(3), which is ABR in R 299.11003}

H. DISPOSITION OF ACCUMULATED LIQUIDS

The licensee shall remove spilled or leaked waste and accumulated precipitation from the tank system within 24 hours of detection and manage it in accordance with the requirements of Part 111 of Act 451 and the rules. {R 299.9521(3)(b), R 299.9615, and 40 CFR §264.193(c)(4), which is ABR in R 299.11003}

I. COMPLIANCE WITH AIR EMISSION AND WASTE MANAGEMENT REQUIREMENTS FOR STORAGE AND TREATMENT IN TANK SYSTEMS

The licensee shall comply with all air emission and waste management requirements for hazardous waste storage and treatment tanks contained in permits issued by the Wayne County Department of Environment, Air Quality Management Division. Failure to abide by the above referenced permits issued thereunder shall constitute a violation of this license. {R 299.9602(1)(b)}

PART V: ENVIRONMENTAL MONITORING CONDITIONS

A. GROUNDWATER MONITORING PROGRAM

1. The licensee shall conduct a detection monitoring program. Under this program, the licensee shall operate and maintain a groundwater monitoring system consisting of monitoring wells labeled B-2-83, B-3-81 and B-4-88, as shown on Figure E.2.L1 of the Groundwater Monitoring Program Sampling and Analysis Plan, Attachment 8 of this license. {R 299.9611(2)(b) and R 299.9612}

   The licensee shall sample the monitoring wells in accordance with the procedures specified below:

   (a) Static water level measuring devices, pumps and/or sampling equipment shall be compatible with the parameters sampled and must be thoroughly cleaned and rinsed before use in each monitoring well. Sampling procedures shall assure that cross-contamination and changes in water chemistry do not occur. {R 299.9612 and 40 CFR §264.97(d) and (e), which are ABR in R 299.11003}

   (b) The static water elevation shall be determined by methods giving precision to 1/8 inch or 0.01 foot prior to purging water from the wells for sampling. Measurements shall be made from the top of the casing with the elevation of all casings in the monitoring well system related to a permanent reference point, using United States Geological Survey (USGS) datum. {R 299.9612 and 40 CFR §264.97(f), which is ABR in R 299.11003}

   (c) To ensure a representative sample, a volume of water shall be purged that is equal to or greater than three times the amount of water in the well casing, or until pH and specific conductance stabilize, or until the well is dry, before obtaining a sample for analysis as specified in Attachment 8 of this license. Wells shall be sampled immediately after purging where recovery rates allow. Where wells are pumped dry during purging, recovery rates shall be determined and samples taken as soon as sufficient recovery occurs. {R 299.9612 and 40 CFR §264.97(d) and (e), which are ABR in R 299.11003}

   (d) Water removed from each monitoring well shall be managed as specified in Attachment 8 of this license. {R 299.9521(3)(b)}

   (e) All monitoring wells shall have protective barriers, be clearly labeled, securely capped, and locked when not in use. {R 299.9612 and 40 CFR §264.97(c)-(e), which are ABR in R 299.11003}

   (f) Prior to undertaking monitoring well replacement or repair, the licensee shall obtain the written approval of the Waste Management Division, unless the location, design, and depth of the replacement monitoring well remains unchanged. {R 299.9519(5)(c)(i)}

2. The licensee shall collect and analyze samples according to the schedule, parameters, and procedures specified in the Groundwater Monitoring Program Sampling and Analysis Plan, Attachment 8 of this license. The licensee shall submit proposed revisions to the Groundwater Monitoring Program Sampling and Analysis Plan to the Chief of the Waste Management Division for approval prior to implementation and shall revise any other affected document accordingly. If approved, the revisions shall become part of this operating license. {R 299.9519(5)(c)(ii), R 299.9611(2)(a), R 299.9612, and 40 CFR §264.97(d) and (e), which are ABR in R 299.11003}

3. The licensee shall submit an annual groundwater report to the Chief of the Waste Management Division no later than March 1 for the previous calendar year's activities. The report shall include a summary of groundwater quality data, data graphs, data tables, statistical analyses to date, and identification of any statistically significant increases (and/or pH decreases) pursuant to Conditions V.A.6 and V.A.11 of this license. The licensee shall determine the groundwater flow rate and

direction in the monitored zones at least annually, and provide a groundwater contour map and graphs from this data. This annual report is in addition to the reporting requirements of Condition II.L.4. of this license. {R 299.9612(1) and 40 CFR §264.97(j), which is ABR in R 299.11003}

4. Establishing Background. The licensee shall establish background groundwater quality values at monitoring wells for the parameters specified in Table L.2 of Attachment 8 of this license.

   (a) Background values for primary parameters shall be established by sampling quarterly for years 1994 through 1997 and by calculating the means of the quarterly results. Within 30 days after the effective date of this license, the licensee shall submit the mean background values, variance, and standard deviations for each monitored parameter at each well to the Chief of the Waste Management Division.

   (b) Background values for secondary parameters shall be established by sampling quarterly for years 1994 through 1997 and by calculating the means of the quarterly results. Within 30 days after the effective date of this license, the licensee shall submit the mean background values, variance, and standard deviations for each monitored parameter at each well to the Chief of the Waste Management Division.

   (c) In the event that groundwater quality at any well shows a significant change (which is proven not to be caused by the facility), a petition may be submitted to the Chief of the Waste Management Division to re-establish background quality. Background values may be re-established only upon written approval of the Chief of the Waste Management Division.

   {R 299.9612(1)(d) and (e) and 40 CFR §264.97(a) and (g), which are ABR in R 299.11003}

5. Detection Monitoring Program. The licensee shall quarterly sample the monitoring wells B-2-83, B-3-81 and B-4-88 and analyze the samples for the primary and secondary parameters listed in Table L.2. Data and evaluations must be submitted to the Chief of the Waste Management Division in accordance with the time frame specified in Condition II.L.4. of this license. Table L.2 is included in Attachment 8 of this license. {R 299.9612 and 40 CFR §264.98}

6. Primary Parameters. Within 30 days of each sampling of each monitoring well, the licensee shall determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each primary parameter listed in Table L.2 of Attachment 8 of this license. A statistically significant increase (or change in pH) shall be determined using the statistical evaluation specified in Attachment 8 of this license. {R 299.9612(1)(e) and 40 CFR §264.97(h) and (i), which are ABR in R 299.11003}

7. If a statistically significant increase (or change in pH) is detected, the licensee shall notify the Waste Management Division, Hazardous Waste Program Section, Technical Support Unit by telephone within one working day and arrange a resampling as soon as possible to confirm if a statistically significant increase (or change in pH) exists. Resampling must include not less than four replicate samples at the affected well[s] for the primary parameter[s] in question. {R 299.9612 and 40 CFR §264.97(g), which is ABR in R 299.11003}

8. If the licensee determines pursuant to Conditions V.A.6. and V.A.7. of this license that a statistically significant increase (or change in pH) has occurred for primary parameters, the licensee shall: {R 299.9612 and 40 CFR §264.98(f) and (g), which are ABR in R 299.11003}

   (a) Notify the Director within one working day by calling the Chief of the Waste Management Division or the appropriate Waste Management Division District Supervisor or, in the event of their unavailability, the Department of Environmental Quality PEAS at 1-800-292-4706.

(b) Provide follow-up notification to the Chief of the Waste Management Division in writing within seven calendar days of the telephone call. The notification shall indicate what parameters or constituents have shown statistically significant changes and the wells in which the changes have occurred.

(c) As soon as possible, sample the groundwater in all monitoring wells for primary and secondary parameters and determine the concentration of all constituents identified in Appendix IX of 40 CFR Part 261 that are present in groundwater and for which approved analysis methods exist. The licensee shall also establish background values for Appendix IX constituents detected pursuant to R 299.9612 and 40 CFR §264.98(g)(3), which is ABR in R 299.11003.

(d) Immediately take steps to determine the cause of the contamination and eliminate the source of discharge.

(e) Within 90 days of the determination, submit to the Chief of the Waste Management Division an application for a license modification to establish a compliance monitoring and corrective action program meeting the requirements of R 299.9612. The application shall include the following information:

(i) An identification of the concentration of all Appendix IX constituents found in the groundwater.

(ii) Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of R 299.9612.

(iii) Any proposed changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical procedures used at the facility necessary to meet the requirements of R 299.9612.

(f) Within 180 days, submit to the Chief of the Waste Management Division detailed description of corrective actions that shall achieve compliance with applicable laws and rules, including a schedule of implementation. Corrective action shall also meet the requirements of R 299.9629, and include a plan for a groundwater monitoring program that shall demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of 40 CFR §264.99, which is ABR in R 299.11003.

(g) During the period prior to a license modification requiring a compliance monitoring and corrective action program, the licensee shall provide the Chief of the Waste Management Division, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and eliminating the discharge. The licensee shall include in the written report the results of all samples from environmental monitoring conducted by the licensee.

9. If the licensee determines pursuant to Conditions V.A.6. and V.A.7. of this license that a statistically significant increase (or change in pH) in hazardous constituents has occurred in groundwater, it may demonstrate that a source other than the licensed facility caused the increase (or change in pH) or that the increase (or change in pH) resulted from error in sampling, analysis or evaluation. While the licensee may make a demonstration under this condition in addition to, or in lieu of, submitting a license modification application within the time specified in Condition V.A.8.(e) of this license, the licensee is not relieved of the requirement to submit a license modification application within the time specified unless the demonstration made under this condition successfully shows that a source other than the licensed facility caused the increase (or change in

pH) or that the increase (or change in pH) resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this condition, the licensee shall:

(a) Notify the Chief of the Waste Management Division within seven days of the determination that it intends to make a demonstration under this condition.

(b) Within 90 days of the determination, submit a report to the Chief of the Waste Management Division that demonstrates that a source other than the licensed facility solely caused the increase (or change in pH), or that the increase (or change in pH) was caused by error in sampling, analysis, or evaluation.

(c) Within 90 days of the determination, submit to the Chief of the Waste Management Division an application for a license modification to make any appropriate changes to the groundwater monitoring program at the facility.

(d) Continue to monitor groundwater in compliance with this license.

{R 299.9612 and 40 CFR §264.98(g)(6), which is ABR in R 299.11003}

10. In the event that the Chief of the Waste Management Division determines from the findings of Conditions V.A.6. and V.A.7. of this license that a statistically significant increase (or change in pH) in hazardous constituents has occurred in the groundwater, and the Chief of the Waste Management Division finds, in accordance with Section 11148 of Act 451, that the increase (or change in pH) may present an imminent and substantial hazard to the health of persons or to the natural resources, or is endangering or causing damage to public health or the environment, the licensee shall immediately cease waste receipt, storage, and treatment at the affected units until instructed by the Chief of the Waste Management Division that operations may resume. {R 299.9612(1)(g)}

11. <u>Secondary Parameters</u>. Within 30 days of each sampling of each monitoring well, the licensee shall determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each secondary parameters listed in Table L.2 of Attachment 8 of this license. A significant increase (or change in pH) shall be determined using the statistical evaluation specified in Attachment 8 of this license. {R 299.9612(1)(c)}

12. If the licensee determines pursuant to Condition V.A.11. of this license that a statistically significant increase (or change in pH) has occurred for any secondary parameter, the licensee shall:

(a) Notify the Director, within one working day, by calling the Chief of the Waste Management Division or the appropriate Waste Management Division District Supervisor.

(b) Resample for both primary and secondary parameters in the affected wells, taking not less than four samples at each well.

(c) Redetermine whether or not a statistically significant increase (or change in pH) has occurred in either primary or secondary parameters, and, within one working day, notify the Chief of the Waste Management Division.

(d) If confirmed, the licensee shall immediately take steps to determine the cause of contamination and eliminate the source of the discharge. A report that explains the chronology of events, investigative methods, all lab analyses, calculations, field activities, and findings/conclusions, related to this determination shall be submitted within 60 days of a statistically significant determination under Condition V.A.11. of this license.

(e) The licensee may demonstrate that a source other than the facility, or an error in sampling, analysis, or evaluation solely caused the increase. A report that contains the information set forth in Condition V.A.12.(d) of this license shall be submitted within 60 days of a statistically significant determination under Condition V.A.11. of this license.

{R 299.9612(1)(c)}

B. AMBIENT AIR MONITORING PROGRAM

1. The licensee shall conduct ambient air monitoring in accordance with the program specified in Attachment 8 of this license. {R 299.9611(2)(c)}

2. The licensee shall report ambient air monitoring results as required by Condition II.L.3. of this license.

C. EFFLUENT MONITORING PROGRAM

1. The licensee shall conduct monitoring of the treated effluent discharged to the sewer system each operating day in accordance with the program specified in Attachment 8 of this license to determine compliance with the City of Detroit discharge limitations.

2. The licensee shall provide written notification to the Chief of the Waste Management Division of any anticipated changes in the approved effluent monitoring program or discharge limitations specified in Attachment 8 of this license and obtain written approval prior to implementation.

3. The licensee shall report effluent monitoring results as required by Condition II.L.4. of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

PART VI: CORRECTIVE ACTION CONDITIONS

A. CORRECTIVE ACTION AT THE FACILITY

The licensee shall implement corrective action for all releases of a contaminant from any waste management units at the facility, regardless of when the contaminant may have been placed in or released from the waste management unit. For the purposes of this license, the term "corrective action" means an action determined by the Chief of the Waste Management Division to be necessary to protect the public health, safety, welfare, or the environment, and includes, but is not limited to, investigation, evaluation, cleanup, removal, remediation, monitoring, containment, isolation, treatment, storage, management, temporary relocation of people, and provision of alternative water supplies, or any corrective action allowed under Title II of the federal Solid Waste Disposal Act, or regulations promulgated pursuant to that act. {Sections 11102 and 11115a of Act 451 and R 299.9629}

B. CORRECTIVE ACTION BEYOND THE FACILITY BOUNDARY

The licensee shall implement correction action beyond the facility boundary if the release of a contaminant has or may have migrated or has or may have been emitted, beyond the facility boundary, unless the licensee demonstrates to the satisfaction of the Chief of the Waste Management Division that, despite the licensee's best efforts, the licensee was unable to obtain the necessary permission to undertake this correction action. The licensee shall not be relieved of all responsibility to clean up a release that has migrated or has been emitted beyond the facility boundary where off-site access is denied. On-site measures to address such releases shall be addressed under this part of the license, as determined to be necessary on a case-by-case basis. {Section 11115a of Act 451 and R 299.9629}

C. IDENTIFICATION OF EXISTING WASTE MANAGEMENT UNITS

1. The following waste management units (WMUs) have been identified at the facility:

WMU Number 1	Former Underground Tank Farm
WMU Number 2	Four 1,500 Gallon Underground Tanks
WMU Number 3	Three or More Tanks Located on North End of Facility
WMU Number 4	Six or More Tanks Located at the South End of the Facility
WMU Number 5	Sludge Sump in the Vicinity of the Facility Control Room

2. The following WMUs do not require corrective action at this time:

   The following WMUs, identified in the licensee's June 2, 1990 federal Hazardous and Solid Waste Amendments permit, require no further corrective action at this time. The determination that no further corrective action is required at this time is based on the design of the units and the available information regarding the units which indicates that no known or suspected releases of contaminants from the units have occurred.

   a. WMU Numbers 1 through 5.

3. Within 30 days of discovery of a new release of a contaminant from a WMU, the licensee shall provide written notification to the Chief of the Waste Management Division. The written notification shall include all available information pertaining to the release. Based on a review of all of the information, the Chief of the Waste Management Division may require corrective action for the newly identified release. The licensee shall submit a written RCRA Facility Investigation (RFI) Work Plan to the Chief of the Waste Management Division within 60 days after written notification by the Chief of the Waste Management Division that corrective action for the release is required.

{Section 11115a of Act 451 and R 299.9629}

D. **IDENTIFICATION OF NEW WASTE MANAGEMENT UNITS**

1. Within 30 days of discovery of a new WMU or a release of a contaminant from a new WMU, the licensee shall provide written notification to the Chief of the Waste Management Division. The written notification shall include all of the following information:

    a. The location of the unit on the facility topographic map.

    b. The designation of the type of unit.

    c. The general dimensions and structural description, including any available drawings of the unit. .

    d. The date the unit was operated.

    e. Specification of all waste(s) that have been managed in the unit.

    f. All available information pertaining to any release of a contaminant from the unit.

2. Based on a review of all of the information provided in Condition VI.D.1 of this license, the Chief of the Waste Management Division may require corrective action for the newly identified WMU. The licensee shall submit a written RFI Work Plan to the Chief of the Waste Management Division within 60 days after written notification by the Chief of the Waste Management Division that corrective action for the unit is required.

{Section 11115a of Act 451, R 299.9629, and 40 CFR §270.14(d), which is ABR in R 299.11003}

E. **RCRA FACILITY INVESTIGATION**

For new releases or new WMUs that require further actions, the licensee shall conduct an RFI to determine if a release of a contaminant(s) from any of the WMUs identified in Conditions Vi.C.1 and VI.D.2 of this license has occurred, and if a release(s) has occurred, evaluate the nature and extent of the release(s). The RFI shall be conducted in accordance with Conditions VI.E.1.-VI.E.5. and Attachment 9 of this license.

1. The licensee shall submit a written RFI Work Plan to the Chief of the Waste Management Division for review and approval in accordance with Conditions VI.C.3 and VI.D.2 of this license.

2. The Chief of the Waste Management Division will approve or modify and approve the RFI Work Plan, or provide a written Notice of Deficiency on the RFI Work Plan. The licensee shall modify the RFI Work Plan in accordance with the Notice of Deficiency and submit a new RFI Work Plan or revisions to the RFI Work Plan to the Chief of Waste Management Division for approval within 90 days after receipt of the Notice of Deficiency. Upon approval by the Chief of the Waste Management Division, the RFI Work Plan becomes an enforceable condition of this license.

3. The licensee shall implement the approved RFI Work Plan within 30 days after receipt of the written approval by the Chief of the Waste Management Division for the RFI Work Plan.

4. The licensee shall submit a written RFI Final Report to the Chief of the Waste Management Division for review and approval within 90 days after the completion of the RFI. The RFI Final Report shall document compliance with the approved RFI Work Plan and support further corrective action at the facility.

5. The Chief of the Waste Management Division will approve the RFI Final Report or provide a written Notice of Deficiency on the RFI Final Report. The licensee shall modify the RFI Final Report in accordance with the Notice of Deficiency and submit a new RFI Final Report or revisions to the RFI Final Report to the Chief of the Waste Management Division for approval within 90 days of receipt of the Notice of Deficiency.

6. The licensee shall submit monthly written RFI progress reports to the Chief of the Waste Management Division.

7. The licensee shall comply with the time frames specified in Condition VI.E.1.-VI.E.6. of this license unless otherwise approved in writing by the Chief of the Waste Management Division.

{Section 11115a of Act 451 and R 299.9629}

F. INTERIM MEASURES

The licensee shall conduct interim measures at the facility as necessary.

{Section 11115a of Act 451 and R 299.9629}

G. DETERMINATION OF NO FURTHER ACTION

1. Based on the results of the RFI and other relevant information, the licensee shall submit a written request for a minor license modification to the Chief of the Waste Management Division if the licensee wishes to terminate corrective action for a specific WMU identified in Condition VI.D.2. of this license. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from the WMU and that the WMU does not pose a threat to public health, safety, welfare, or the environment.

2. Based on the results of the RFI and other relevant information, the licensee shall submit a written request for a major license modification to the Chief of the Waste Management Division if the licensee wishes to terminate facility-wide corrective action. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from any of the WMUs at the facility and that none of the WMUs pose a threat to public health, safety, welfare, or the environment.

3. If, based upon a review of the licensee's request for a license modification pursuant to Conditions VI.G.1 or VI.G.2 of this license, the results of the completed RFI, and other relevant information, the Chief of the Waste Management Division determines that the releases or suspected releases of a contaminant(s) do not exist and that the WMU(s) do not pose a threat to public health, safety, welfare, or the environment, the Chief of the Waste Management Division will approve the requested modification.

4. A determination of no further action shall not preclude the Chief of the Waste Management Division from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, if necessary to protect public health, safety, welfare, or the environment, when facility-specific circumstances indicate that potential or actual releases of a contaminant(s) may occur.

5. A determination of no further action shall not preclude the Chief of the Waste Management Division from requiring further corrective action at a later date, if new information or subsequent analysis indicates that a release or potential release of a contaminant(s) from a WMU at the facility may pose a threat to public health, safety, welfare, or the environment. The Chief of the Waste Management Division will initiate the necessary license modifications if further corrective action is required at a lat date.

{Section 11115a of Act 451 and R 299.9629}

H. CORRECTIVE MEASURES STUDY

If the Chief of the Waste Management Division determines, based on the results of the RFI and other relevant information, that corrective measures are necessary, the Chief of the Waste Management Division will notify the licensee in writing that a Corrective Measures Study (CMS) is required. If required by the Chief of the Waste Management Division, the licensee shall conduct a CMS to develop and evaluate the corrective measure alternative(s) necessary to address the release(s) of a contaminant(s) and the WMU(s) that are identified in the approved RFI Final Report as requiring further corrective action. The CMS shall be conducted in accordance with Conditions VI.H.1-VI.H.7 and Attachment 10 of this license.

1. The licensee shall submit a written CMS Work Plan to the Chief of the Waste Management Division for review and approval within 90 days after receipt of written notification that a CMS is required.

2. The Chief of the Waste Management Division will approve or modify and approve the CMS Work Plan, or provide a written Notice of Deficiency on the CMS Work Plan. The licensee shall modify the CMS Work Plan in accordance with the Notice of Deficiency and submit a new CMS Work Plan or revisions to CMS Work Plan to the Chief of Waste Management Division for approval within 60 days after receipt of the Notice of Deficiency. Upon approval by the Chief of the Waste Management Division, the CMS Work Plan becomes an enforceable condition of this license.

3. The licensee shall implement the approved CMS Work Plan within 30 days after receipt of the Chief of the Waste Management Division's written approval of the CMS Work Plan.

4. The licensee shall submit a written CMS Final Report to the Chief of the Waste Management Division for review and approval within 90 days after the completion of the CMS. The CMS Final Report shall document compliance with the approved CMS Work Plan and support further corrective action at the facility.

5. The Chief of the Waste Management Division will approve the CMS Final Report or provide a written Notice of Deficiency on the CMS Final Report. The licensee shall modify the CMS Final Report in accordance with the Notice of Deficiency and submit a new CMS Final Report or revisions to the CMS Final Report to the Chief of the Waste Management Division for approval within 60 days of receipt of the Notice of Deficiency.

6. The licensee shall submit monthly written CMS progress reports to the Chief of the Waste Management Division.

7. The licensee shall comply with the time frames specified in Condition VI.H.1-VI.H.6 of this license unless otherwise approved in writing by the Chief of the Waste Management Division.

{Section 11115a of Act 451 and R 299.9629}

I. CORRECTIVE MEASURES IMPLEMENTATION

The licensee shall conduct Corrective Measures Implementation (CMI) based on the CMS Final Report approved by the Chief of the Waste Management Division. The CMI shall be conducted in accordance with Conditions VI.I.1-VI.I.10 and Attachment 11 of this license.

1. The licensee shall submit a written CMI Work Plan to the Chief of the Waste Management Division for review and approval within 90 days after the approval of the CMS Final Report by the Chief of the Waste Management Division.

2. The Chief of the Waste Management Division will approve or modify and approve the CMI Work Plan, or provide a written Notice of Deficiency on the CMI Work Plan. The licensee shall modify the CMI Work Plan in accordance with the Notice of Deficiency and submit a new CMI Work Plan or revisions to the CMI Work Plan to the Chief of the Waste Management Division for approval within 60 days after receipt of the Notice of Deficiency. The Waste Management Division will provide notice of its draft decision on the CMI Work Plan to persons on the facility mailing list and an opportunity for a public hearing. Upon approval by the Chief of the Waste Management Division, the CMI Work Plan becomes an enforceable condition of this license.

3. The licensee shall implement the approved CMI Work Plan within 30 days after receipt of the written approval of the Chief of the Waste Management Division for the CMI Work Plan.

4. The licensee shall submit a written Construction Completion Report to the Chief of the Waste Management Division for review and approval within 90 days after the construction associated with the corrective measures has been completed and all operational tests run. The Construction Completion Report shall document how the construction is in compliance with the approved design plans and specifications and that the corrective measures are performing satisfactorily based on the operational tests.

5. The Chief of the Waste Management Division will approve or modify and approve the Construction Completion Report, or provide a written Notice of Deficiency on the Construction Completion Report. The licensee shall modify the Construction Completion Report in accordance with the Notice of Deficiency and submit a new Construction Completion Report or revisions to the Construction Completion Report to the Chief of the Waste Management Division for approval within 60 days after receipt of the Notice of Deficiency. Upon approval by the Chief of the Waste Management Division, the Construction Completion Report becomes an enforceable condition of this license.

6. The licensee shall implement full-scale corrective measures within 30 days of receipt of written approval of the Construction Completion Report by the Chief of the Waste Management Division.

7. The licensee shall submit a written CMI Final Report to the Chief of the Waste Management Division for review and approval within 90 days after the corrective measures have been completed and the corrective measures criteria have been met. The CMI Final Report shall document compliance with the corrective measures completion criteria and provide justification that the corrective measures may cease.

8. The Chief of the Waste Management Division will approve or modify and approve the CMI Final Report, or provide a written Notice of Deficiency on the CMI Final Report. The licensee shall modify the CMI Final Report in accordance with the Notice of Deficiency and submit a new CMI Final Report or revisions to the CMI Final Report to the Chief of the Waste Management Division for approval within 60 days after receipt of the Notice of Deficiency.

9. The licensee shall submit quarterly written CMI progress reports on the construction phase and quarterly written CMI progress reports on the operation and maintenance activities phase to the Chief of the Waste Management Division.

10. The licensee shall comply with the time frames specified in Condition VI.I.1-VI.I.9 of this license unless otherwise approved in writing by the Chief of the Waste Management Division.

{Section 11115a of Act 451 and R 299.9629}

J. COST ESTIMATE FOR CORRECTIVE ACTION

1. The licensee shall prepare a detailed written cost estimate for CMI at the facility. {R 299.9712}

2. The licensee shall submit the detailed written cost estimate for CMI to the Chief of the Waste Management Division for review and approval in conjunction with the CMI Work Plan required in Condition VI.I.1 of this license. {R 299.9712}

3. The Chief of the Waste Management Division will approve the cost estimate for CMI or provide a written Notice of Deficiency on the cost estimate for CMI. The licensee shall modify the cost estimate for CMI in accordance with the Notice of Deficiency and submit a new cost estimate for CMI to the Chief of the Waste Management Division for approval within 60 days of receipt of the Notice of Deficiency. Upon approval by the Chief of the Waste Management Division, the cost estimate for CMI becomes an enforceable condition of this license. {R 299.9712}

4. Until the Director notifies the licensee in writing that the licensee is no longer required by R 299.9713 to maintain financial assurance for CMI at the facility, the licensee shall adjust the CMI cost estimate for inflation within 60 days prior to the anniversary of the date of the establishment of the financial mechanism used to demonstrate financial assurance for CMI. If the financial mechanism used is the financial test or corporate guarantee, the licensee shall adjust the CMI cost estimate for inflation within 30 days after the close of the firm's fiscal year and before submission of updated financial information to the Chief of the Waste Management Division. Whenever the current cost estimate increases to an amount greater than the current value of the associated financial mechanism for reasons other than inflation, the licensee shall, within 60 days, increase the value of the mechanism to an amount at least equal to the adjusted cost estimate. Evidence of such increases shall be submitted to the Chief of the Waste Management Division during the 60-day period. {R 299.9712}

5. The licensee shall recalculate the CMI cost estimate within 30 days after the Chief of the Waste Management Division has approved a modification of the CMI Work Plan. Until the Director notifies the licensee in writing that the licensee is no longer required to maintain financial assurance for CMI, the licensee shall revise the CMI cost estimate whenever there is a change in the facility's CMI Work Plan, if the change in the CMI Work Plan increases the cost of CMI. {R 299.9712}

6. The licensee shall keep the latest CMI cost estimate at the facility. {R 299.9712}

K. FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

1. The licensee shall establish and continuously maintain corrective action financial assurance in accordance with R 299.9713. The licensee shall submit in conjunction with the CMI Work Plan the CMI financial assurance mechanism approved by the Chief of the Waste Management Division in an amount at least equal to the cost estimate required by Condition VI.J.1 of this license. If more than one mechanism is used, or if more than one facility is covered by the mechanism, the total amount of financial assurance provided for the facility shall at least equal the amount of the cost estimate required by Condition VI.J.1 of this license. The licensee shall submit all proposed changes in the mechanism, other than renewals, extensions, or increases in the amount of assurance, to the Chief of the Waste Management Division and obtain approval prior to implementation. The licensee shall provide the Chief of the Waste Management Division with a signed original of all revisions and renewals within 60 days after such revision or renewal and at least 30 days prior to the anniversary of the establishment of the financial mechanism provided to satisfy the requirements of this condition.

2. The licensee shall establish an approved renewal or replacement CMI financial mechanism at least 30 days prior to the expiration date of the current mechanism, and obtain the Chief of the Waste Management Division's approval of such replacements, for all financial mechanisms provided to satisfy the requirements of this condition. Failure to provide such documentation is a violation of this license and shall be cause for the Chief of the Waste Management Division to access all funds provided in any financial mechanism not renewed or replaced in accordance with this condition and to initiate revocation of this license.

3. Whenever the current CMI cost estimate increases to an amount greater than the current amount of the associated financial mechanism(s) for reasons other than inflation, the licensee shall, within 60 days after the increase, either increase the amount of the mechanism(s) to an amount at least equal to the increased CMI cost estimate, or provide an additional financial mechanism approved by the Chief of the Waste Management Division for an amount at least equal to the difference between the current amount of financial assurance and the increased CMI cost estimate. Evidence of such increased financial assurance must be submitted to the Chief of the Waste Management Division during the 60-day period.

L. SUMMARY OF CORRECTIVE ACTION SUBMITTALS

The licensee shall submit required corrective action documents in accordance with the schedule below.

CORRECTIVE ACTION DOCUMENT	SUBMITTAL DEADLINE
Written notification of a new release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 30 days of discovery
RFI Work Plan for a newly identified release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 60 days after receipt of written notification that corrective action is required
Revised RFI Work Plan for newly identified WMUs and contaminant releases	Within 90 days after receipt of RFI Work Plan Notice of Deficiency
RFI progress reports	Within 30 days of initiation of the RFI and every 30 days thereafter
RFI Final Report for newly identified WMUs and contaminant releases	Within 90 days after completion of RFI

Revised RFI Final Report for newly identified WMUs and contaminant releases	Within 90 days after receipt of RFI Final Report Notice of Deficiency
CMS Work Plan for newly identified WMUs and contaminant releases	Within 90 days after receipt of notification that CMS is required
Revised CMS Work Plan for newly identified WMUs and contaminant releases	Within 60 days after receipt of CMS Work Plan Notice of Deficiency
CMS progress reports	Within 30 days of initiation of the CMS and every 30 days thereafter
CMS Final Report for newly identified WMUs and contaminant releases	Within 90 days of completion of the CMS
Revised CMS Final Report for newly identified WMUs and contaminant releases	Within 60 days after receipt of CMS Final Report Notice of Deficiency
CMI Work Plan for newly identified WMUs and contaminant releases	Within 90 days after approval of the CMS Final Report
Revised CMI Work Plan for newly identified WMUs and contaminant,releases	Within 60 days after receipt of CMI Work Plan Notice of Deficiency
CMI progress reports on construction phase of CMI	Within 90 days of initiation of construction and every 90 days thereafter
CMI progress reports on operation and maintenance activities	Within 90 days of initiation of operation and maintenance activities and every 90 days thereafter
Construction Completion Report	Within 90 days after completion of construction and operational tests
Revised Construction Completion Report	Within 60 days after receipt of Construction Completion Report Notice of Deficiency
CMI Final Report for newly identified WMUs and contaminant releases	Within 90 days after completion of CMI
Revised CMI Final Report for newly identified WMUs and contaminant releases	Within 60 days after receipt of CMI Final Report Notice of Deficiency

M. CORRECTIVE ACTION DOCUMENTS RETENTION

The licensee shall maintain all corrective action documents required by this license at the facility. The documents shall be maintained for the operating life of the facility and until the facility is released from financial assurance requirements for corrective action by the Director.

{Section 11115a of Act 451 and R 299.9629}

PART VII: SCHEDULE OF COMPLIANCE

The licensee shall conduct tank assessments of Tanks 27, 30, 31, CV1, and CV2 pursuant to 40 CFR §264.192, which is ABR in R 299.11003, in accordance with the schedule contained in Attachment 7 to this license.

PART VIII: ATTACHMENTS

The following attachments are incorporated into and enforceable parts of this license. Note: Certain information has been removed from the attachments by the Department of Environmental Quality, Waste Management Division, physically and by striking out text. This removed information is not approved as part of the license. Deletions are specified on the cover pages to each respective attachment, as appropriate.

1. Waste Characteristics
2. Inspection Schedule
3. Personnel Training
4. Hazardous Waste Contingency Plan
5. Closure Plan and Cost Estimate
6. Site Plans
7. Process Information
8. Environmental Monitoring Programs
9. RCRA Facility Investigation
10. Corrective Measures Study
11. Corrective Measures Implementation

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MAR 04 1997 DEQ
Waste Management Division

REJECTED LOAD PROCEDURES

A. TSDF Responsibilities

1. **Totally Rejected Load**

   a. Note reason for rejection in item 19 of the manifest along with date and signature.

   b. Do not sign Item 20.

   c. Remove TSD manifest copy and return the remaining copies of the manifest to the transporter.

2. **Partially Rejected Load**

   a. Permission of the generator must be obtained and documented to partially reject a load.

   b. The reason for rejection, quantity rejected and generator contact name granting permission must be referenced in Item 19.

   c. Item 13 is lined out and the new quantity inserted to reflect only the quantity accepted.

   d. Item 20 is completed.

   e. Obtain the transporters signature and date in item 19 acknowledging the rejected wastes are under the control of the transporter.

   f. Distribute manifest copies as per accepted loads.

B. Transporter Responsibility

1. **Totally Rejected Load**

   a. If an alternate facility is available, contact the generator to obtain permission to designate a new facility.

   b. If permission is obtained:

      i. Alter Item 9/10 on the manifest by simply lining out the original designated facility and replacing with the new facility information.

      ii. Add a note in Item 19 indicating permission granted by generator, contact name, date and transporter signature.

      iii. Transport the load to the newly designated facility for acceptance.

      iv. The newly designated facility will need to be provided with an additional manifest copy since the TSDF which originally rejected the load removed the TSDF copy.

   c. If permission is not obtained or there isn't an alternative facility:

      i. Return the load to the generator and obtain the generators signature and date in Item 19 on the manifest to acknowledge the returned load.

      ii. Remove the transporter copy of the manifest.

2. **Partially Rejected Load**

   a. On the original manifest, sign and date in item 19 acknowledging the rejected wastes are under the control of the transporter.

   b. If an alternate facility is available, contact the generator to obtain permission to designate a new facility.

   c. If permission is obtained,the transporter acting as an authorized contractor for the generator prepares a new manifest as follows:

i. Indicate the more appropriate US DOT description and waste code, if determined necessary by the rejection.

ii. Indicate in item 13 the quantity originally rejected.

iii. Indicate in item 19 the original manifest number and date of rejection.

iv. Complete the newly designated facility information.

v. Indicate in item 16, by clearly printing, generator's name authorizing the newly designated facility. This is verified by having the driver sign on the generators line 'as agent of'. The date of the generator's approval must also be placed on the generator line.

vi. The remainder of the manifest is to be completed with the information supplied on the original manifest. The generator and MDEQ 1st copy of the manifest are to be returned to the generator.

vii. The original manifest number and date of rejection is to be noted in Item 19.

d. The generator has the option of providing a replacement manifest with an original generator signature. The manifest should be completed in accordance with section B.2.c. except B.2.c.v. (It should be noted that the transporter copy for a partially rejected load is the shipping document only authorizing the return of the waste to the generator.)

e. If permission is not obtained from the generator, return the load to the generator. Obtain the generators signature and date in item 19 on the transporter copy, to acknowledge the returned load.

C. Generators Responsibilities

1. **Totally Rejected Loads**

a. Permission may be granted to the transporter to designate an alternate facility.

b. Loads returned to the generator must be signed and dated by the generator in Item 19 acknowledging receipt.

c. The transporter manifest copy is given to the transporter and the MDEQ 2nd copy is mailed to the Department.

d. Returned rejected loads, when sent out to a newly designated facility, must have the original manifest number and the date of rejection noted in Item 19 on the new manifest.

2. **Partially Rejected Loads**

a. Permission must be granted to the TSDF to accept or reject partial loads.

b. For a load returned to the generator:

i. The manifest returned to the generator must be signed and dated by the generator in Item 19 acknowledging receipt and a copy of the signed transporter manifest must be obtained.

ii. The transporter manifest copy is given to the transporter and the MDEQ 1st and 2nd copies are mailed to the Department.

c. There are two options to designate an alternate facility:

i. Provide a new manifest completed in accordance with section B.2.c. except B.2.c.v., to the transporter for shipment of the load to the designated facility. Follow normal manifest distribution.

ii. Designate the transporter as an agent to prepare a new manifest with the aforemention information specified in section B.2.c. Additionally, the generator and MDEQ 1st copy of the manifest is to be returned to the generator by the transporter. The MDEQ 1st copy of the manifest must be mailed by the generator to the Department.

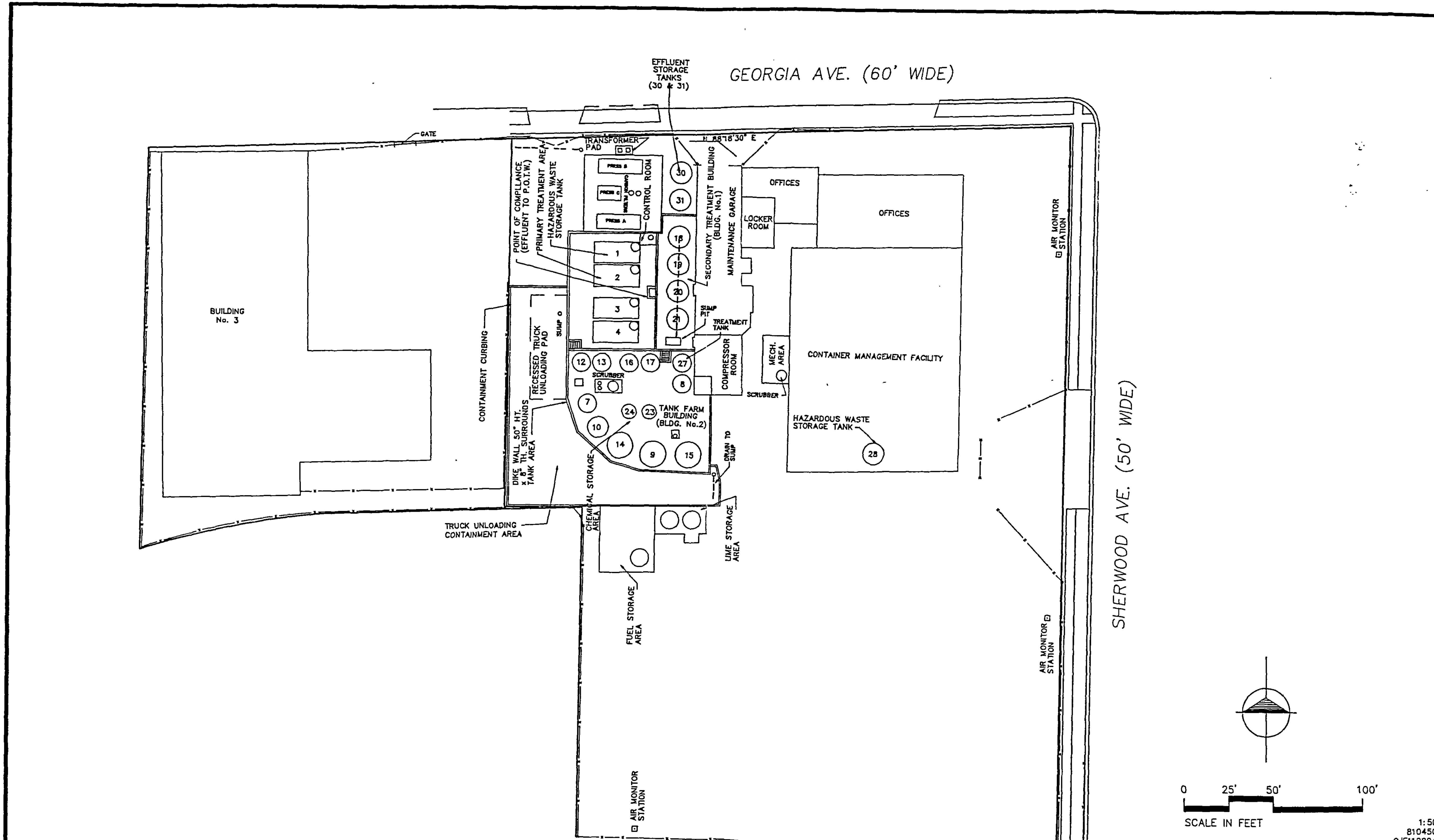
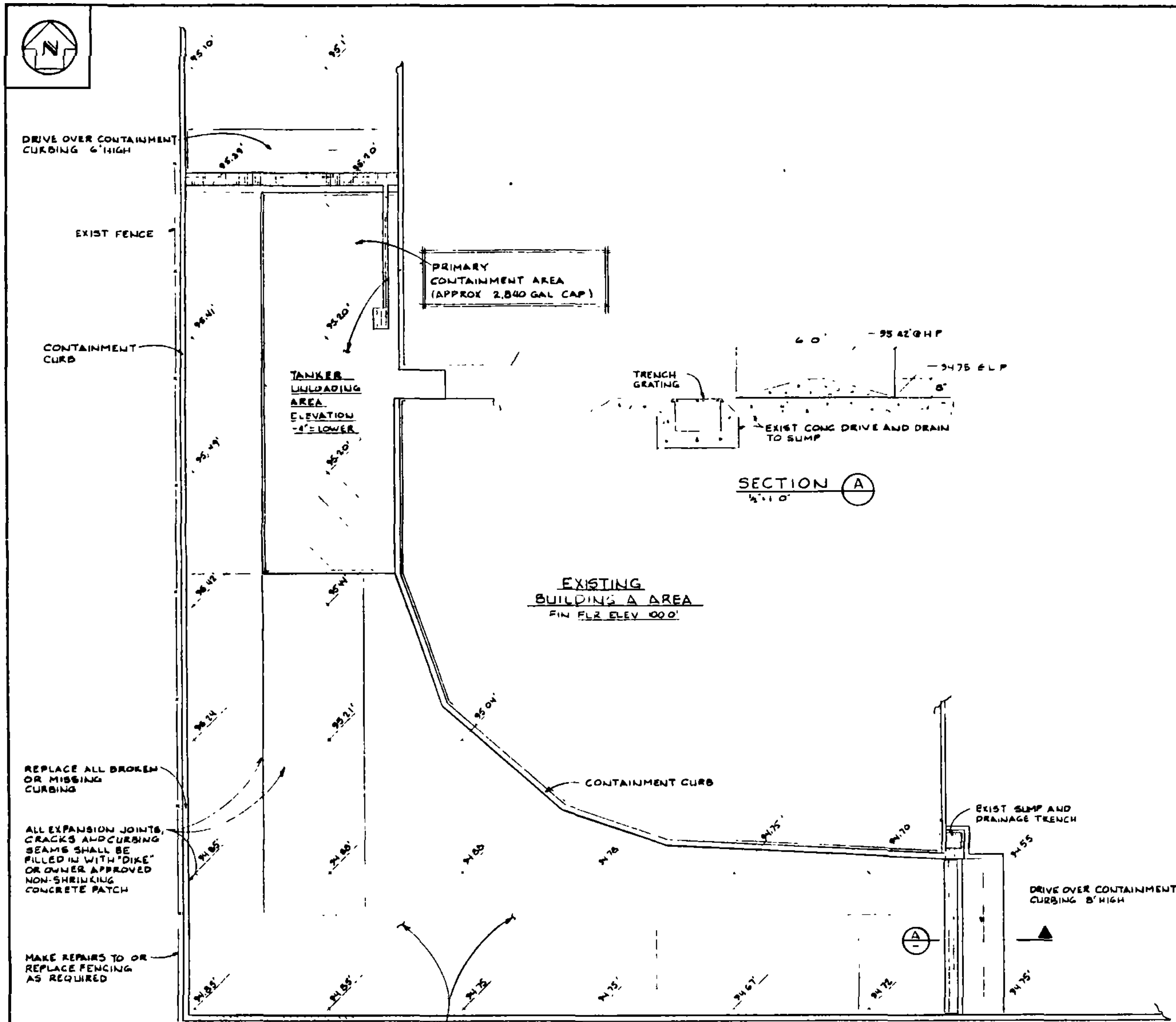


FIGURE B.3, G.1, F.1

SITE PLAN

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER 1994 81045



PLAN VIEW

TANKER UNLOADING CONTAINMENT AREA

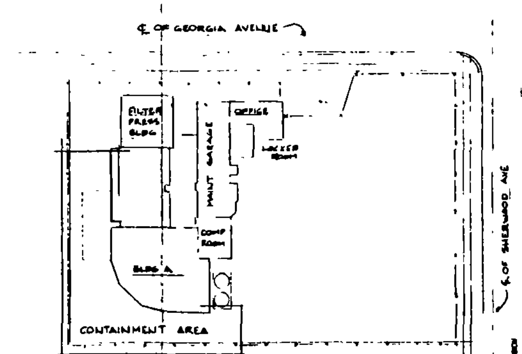
SCALE : 1/8" = 1'-0"

CONCRETE SPECIFICATIONS

1. MATERIAL SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING ASTM STANDARDS.

CEMENT-TYPE		C-150
AGGREGATE		C-33
REINF. STEEL	A-615	GR. 60

2. ALL CONCRETE SHALL HAVE A MIN. 28 DAY STRENGTH OF 3750 PSI. THE SLUMP SHALL BE A MAX. OF 4" AND A MIN. OF 2".
3. CONCRETE SHALL BE DESIGNED AND PLACED PER ACI STANDARD NO. 301 (SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS).
4. HARDENERS AND ADD MIXTURES ARE NOT PERMITTED ON NEW CONCRETE AT THE CONTAINMENT AREAS. SEALERS WILL BE LAID DOWN 30 DAYS AFTER POURING
5. ALL CONCRETE AT THE PRIMARY AND SECONDARY CONTAINMENT AREAS INCLUDING ALL CURBING SHALL BE SEALED WITH TWO (2) COATS OF HEATHANE SEALER NO. 4700 AS MANUFACTURED BY THE "TENNANT COMPANY", WARREN, MI APPROVED APPLICATION CONTRACTOR - GENERAL ACID PROOFING, INC. DETROIT, MI.



KEY PLAN

DESCRIPTION OF REAL ESTATE
LAND IN THE CITY OF DETROIT, WAYNE COUNTY, MICHIGAN

A PARCEL IN THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 21, TOWN 1, RANGE 12 EAST. MORE COMMONLY KNOWN AS 6520 GEORGIA.

WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED

Willi J. [signature] 10/31/90

TREBNEF ENGINEERING CONSULTANTS
ENGINEERING • DESIGN
12554 Dix • Southgate Michigan 48195 • (313) 281 7770

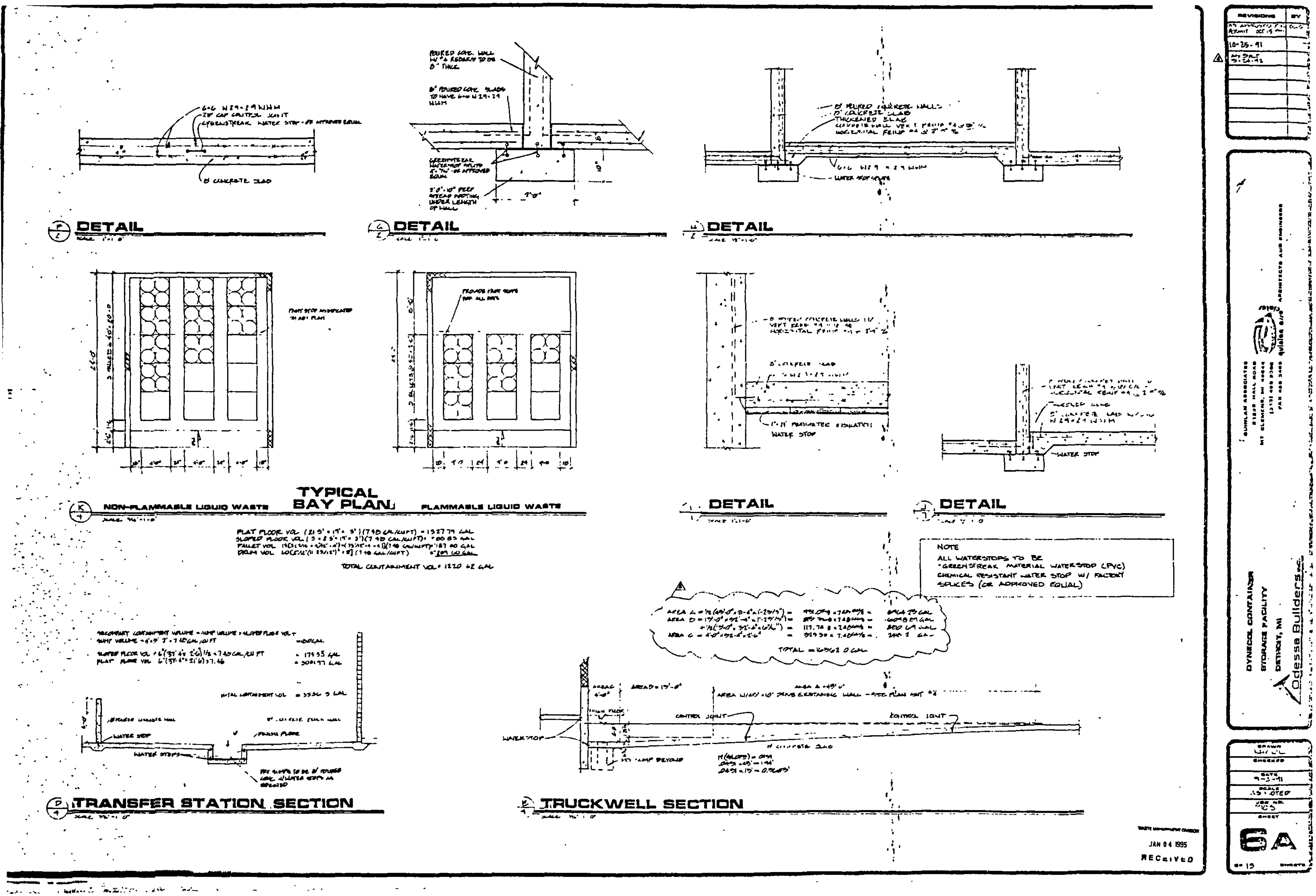
REV	BY	DATE	ISSUED FOR

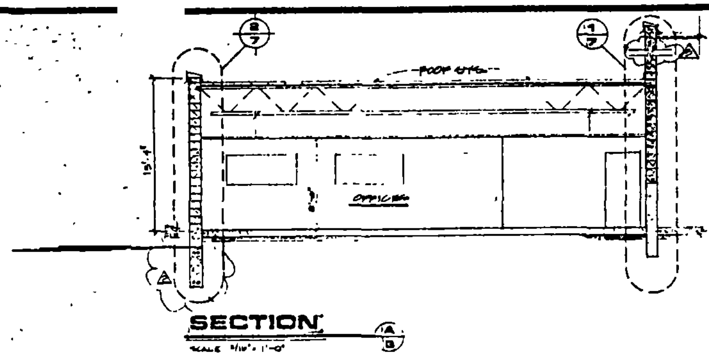
DR. / CHK. / APPR. / DATE

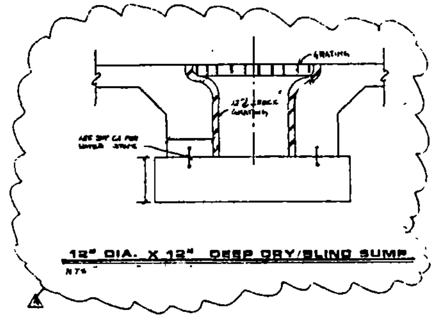
PROJECT
TANKER UNLOADING CONTAINMENT AREA
DYNECOL INC.
6520 GEORGIA STREET
DETROIT, MI 48211

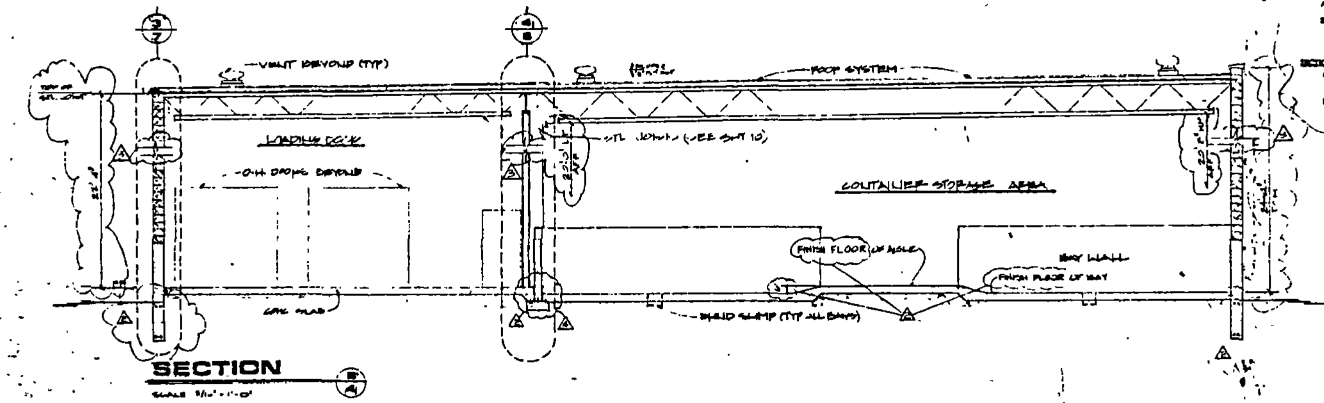
JOB NO 90-126

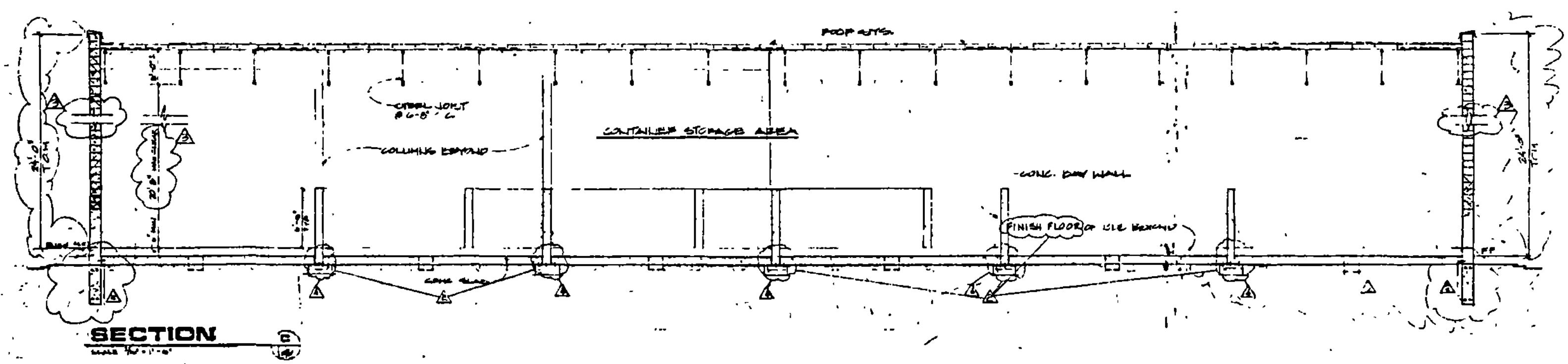
DRAWING NO C-101


DETAIL
DETAIL
DETAIL
POURED CONC. WALL
B" CONCRETE SLAB
TYPICAL BAY PLAN
NON-FLAMMABLE LIQUID WASTE
FLAMMABLE LIQUID WASTE
TOTAL CONTAINMENT VOL = 1220 62 GAL
DETAIL
DETAIL
NOTE
ALL WATERSTOPS TO BE "GREENSTREAK MATERIAL WATERSTOP (PVC) CHEMICAL RESISTANT WATER STOP W/ FACTORY SPLICES (OR APPROVED EQUAL)
TOTAL = 6762 0 GAL
WATER STOP
CONTROL JOINT
TRANSFER STATION SECTION
TRUCKWELL SECTION
JAN 04 1995
RECEIVED
QUINLAN ASSOCIATES
21829 HALL ROAD
MT CLEMENS, MI 48044
FAX 468 3468
quinlan a/e
ARCHITECTS AND ENGINEERS
DYNECOL CONTAINER
STORAGE FACILITY
DETROIT, MI
Odessa Builders INC.
DRAWN
CHECKED
DATE
SCALE
AS NOTED
JOB NO.
SHEET
6A
OF 15 SHEETS









SECTION 09910 — CORROSION RESISTANT LININGS

PART 1 - GENERAL

1.03 JOB CONDITIONS

PART 2 - PRODUCTS

2.01 MATERIALS

PART 3 - EXECUTION

3.01 PREPARATION

3.02 INSTALLATION

REVISIONS	BY
APRIL 29, 1991	A.G.
8 MAY 1991	B.G.
MAY 17 1991	
AUG 28, 1991	
OCT 28 1991	MD
AS APPROVED FOR PERMIT OCT 16 1991	BLDG.
AS BUILT 3-24-92	

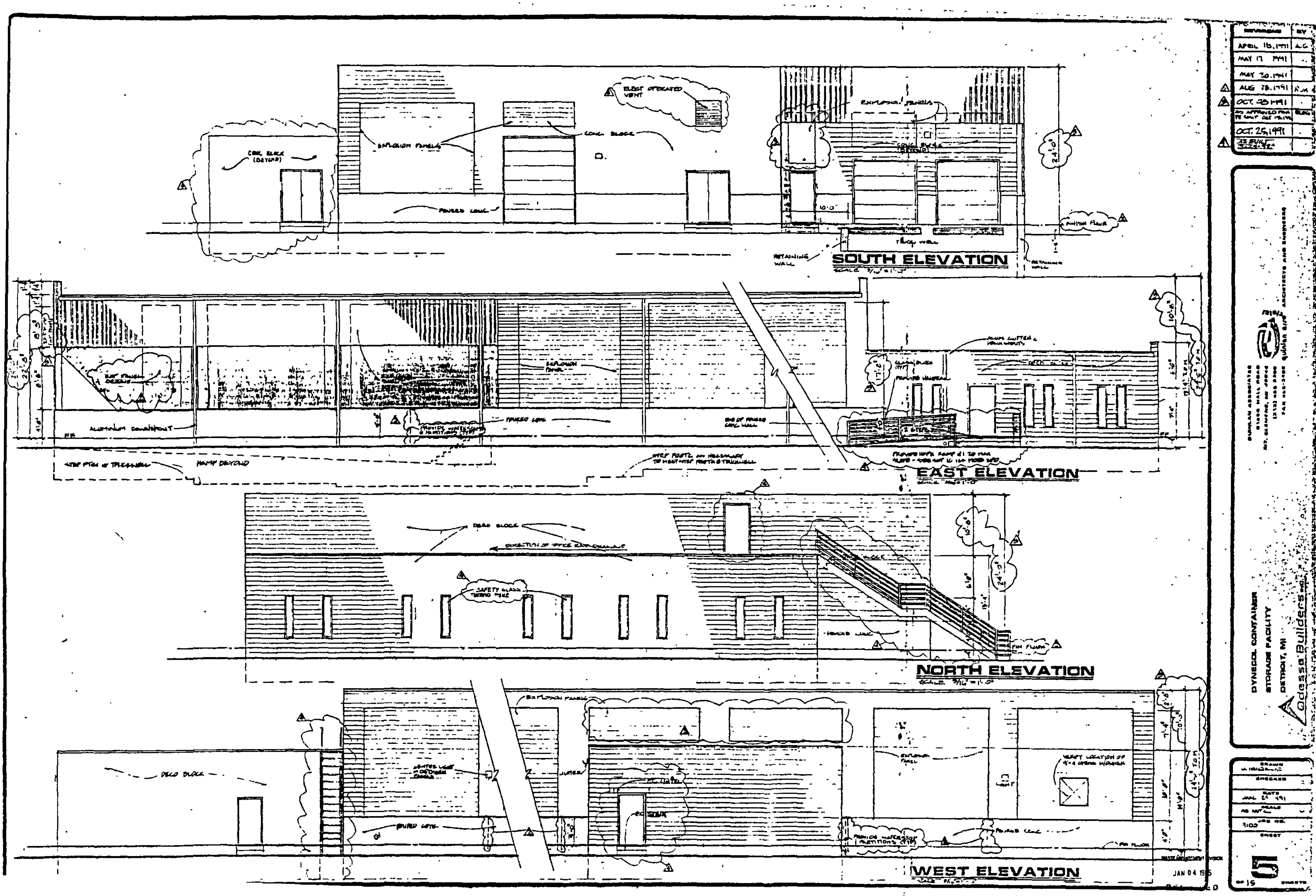
GUNLAN ASSOCIATES
31555 HALL ROAD
MT. CLEMENS, MI. 48046
ARCHITECTS AND ENGINEERS

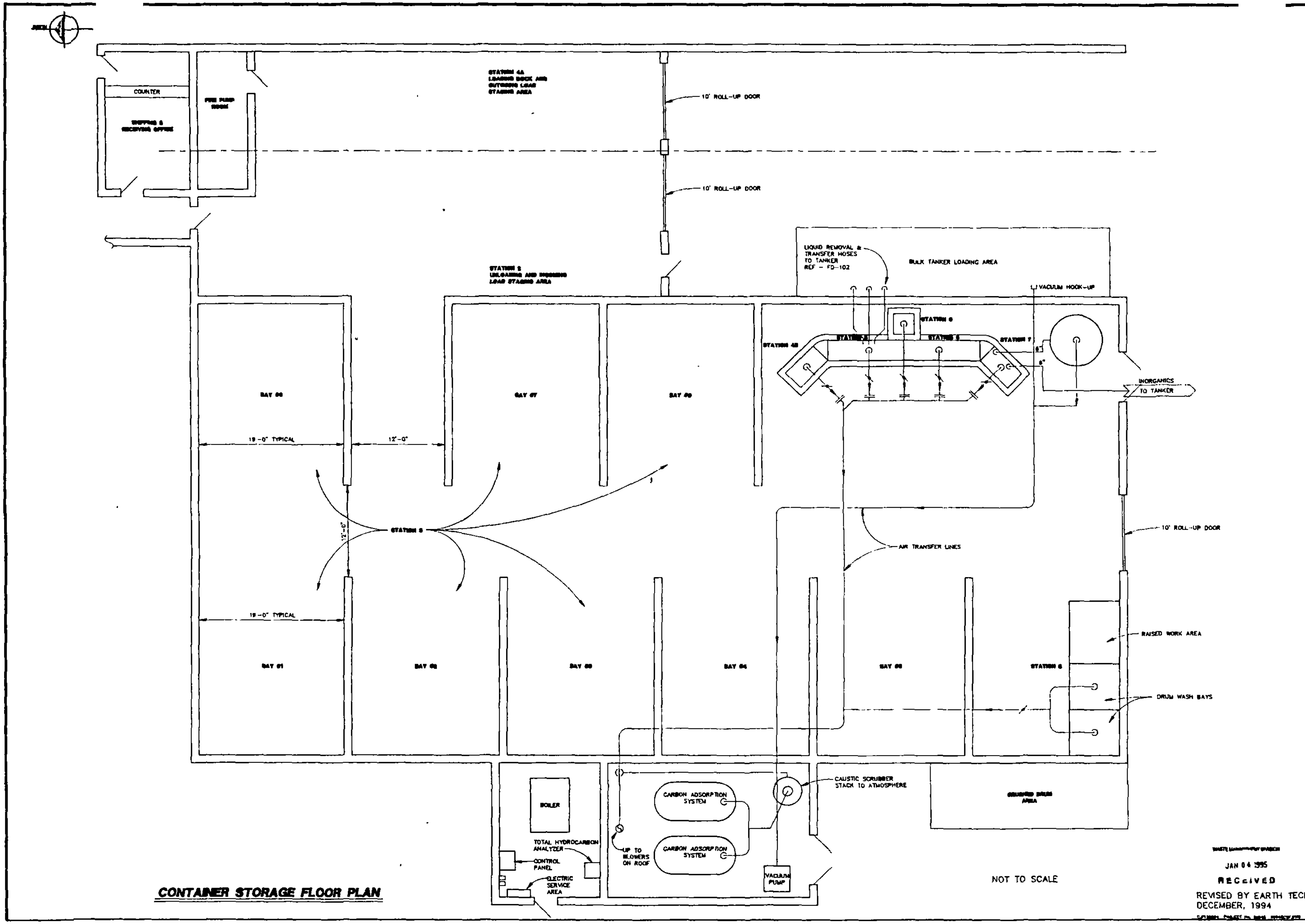
DYNECOL CONTAINER
STORAGE FACILITY
DETROIT, MI

Odesse Builders Inc.

DRAWN: BURKE
CHECKED
DATE: JAN 1991
SCALE: AS NOTED
JOB NO.: 9100
SHEET 6 OF 15 SHEETS

JAN 04 1995
RECEIVED


SOUTH ELEVATION
EAST ELEVATION
NORTH ELEVATION
WEST ELEVATION
EXPLOSION PANELS
CONC. BLOCK
SAFETY GLASS
DECO BLOCK
RETAINING WALL
FIN. FLOOR
APRIL 15, 1991
MAY 17 1991
MAY 30, 1991
AUG 28, 1991
OCT. 25, 1991
DYNECOL CONTAINER
STORAGE FACILITY
DETROIT, MI
Odessa Builders
JAN 04 1995
5
15



CONTAINER STORAGE FLOOR PLAN

ISSUED FOR | REV | BY | DATE

DR | CHK | APPR | DATE

T.I. TREBNEF INCORPORATED
ENGINEERING • DESIGN

PROJECT
DYNECOL CONTAINER STORAGE FACILITY DETROIT, MICHIGAN

JOB No. 90-118

DRAWING No FD-101

	C.L.A. DAMPER	STEAM VALVE	PURGE VALVE	VAPOR VALVE	FIRE VALVE	FIRE WATER VALVE	COOL DOWN DAMPER	CONDENSER VALVE	SOLVENT SENSING VALVE	SURGE [illegible] VALVE	C.L.A. HUMIDITY CONTROL
QUANTITY	4	2	2	2	2	2	2	1	2	1	1
VALVE MAKE	[illegible]	MARWIN	MARWIN	KEYSTONE	MARWIN	MARWIN	KEYSTONE	KEYSTONE	MARWIN	MARWIN	ASCO 2-WAY
MODEL NO.	[illegible]	[illegible]-FTB-6	[illegible]-FTB-6	862-082	[illegible]-FTB-6	[illegible]-FTB-5	862-082	M62-061	[illegible]-FTB-6	[illegible]-FTB-5	8222460
SIZE	12"	2"	1/2"	4"	1 1/4"	1 1/2"	8"	3"	1/2"	2"	3/8"
BODY/TRIM	C.S. SILOXANE COATED	316 S.S.	316 S.S.	C.I./S.S.	316 S.S.	316 S.S.	C.I./S.S.	C.I./AL.BRZ.	316 S.S.	316 S.S.	BRASS
SEAT/SEAL	TEFLON	GRTFE	GRTFE	TFE	GRTFE	GRTFE	TFE	EPDM	GRTFE	GRTFE	TFE
ACTUATOR	KEYSTONE 790-[illegible]	KEYSTONE [illegible]	KEYSTONE 790-100	KEYSTONE [illegible]	KEYSTONE 790-100	KEYSTONE 790-100	KEYSTONE 790-400	KEYSTONE 790-100	KEYSTONE 790-100	KEYSTONE [illegible]	-
SOLENOID VALVE	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	ASCO 4-WAY M.O.-X.P.	-
SPEED CONTROL	KEYSTONE 2-WAY	KEYSTONE 2-WAY	-	KEYSTONE 2-WAY	-	-	-	KEYSTONE 2-WAY	-	KEYSTONE 2-WAY	-
LIMIT SWITCH ASSEMBLY	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	KEYSTONE K-SWITCH BOX X.P.	-

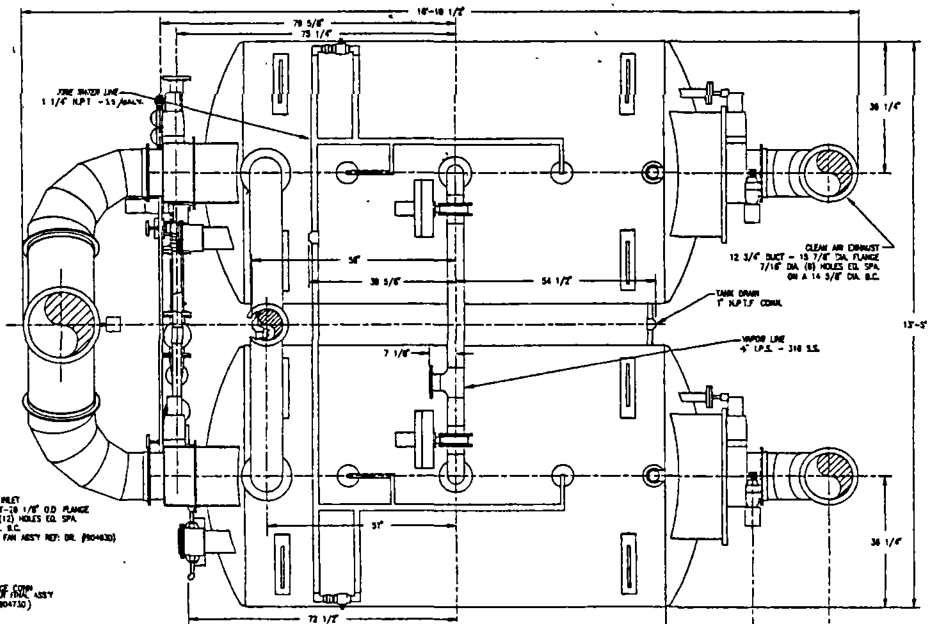
MANUAL & MISCELLANEOUS VALVES

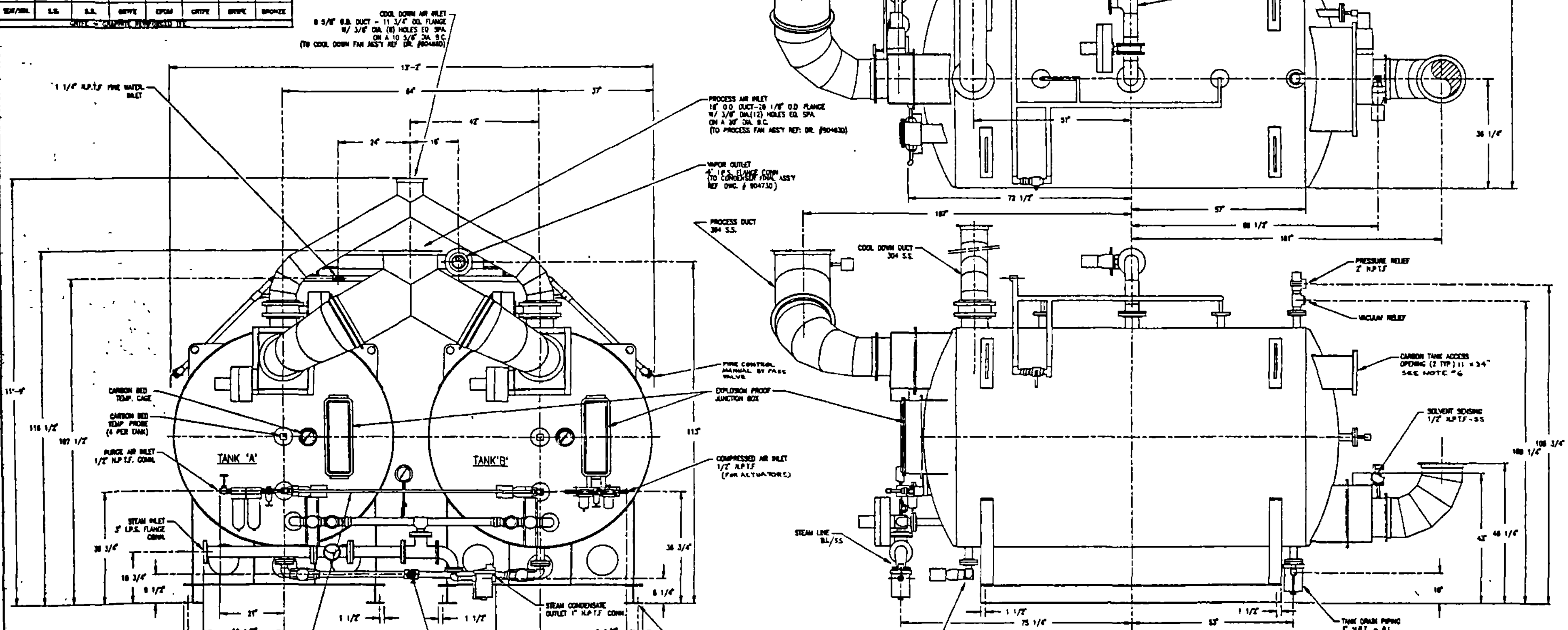
	STEAM	PURGE	SURGE CHAMBER [illegible]	CONDENSER WATER OUT	FAN/FILTER DRAIN	FIRE	TANK DRAIN CHECK VALVE
QUANTITY	2	2	1	1	4	2	2
VALVE MAKE	JENKINS	JENKINS	MARWIN	KEYSTONE	MARWIN	MARWIN	WATTS
MODEL NO.	C356-P	C560-P	[illegible]-FTB-6	M62-061	[illegible]-FTB-6	[illegible]-FTB-6	-
SIZE	3"	1/2"	2"	3"	1/2"	1 1/4"	1"
BODY/TRIM	BRZ./S.S.	BRZ./S.S.	316 S.S.	C.I./AL.BRZ.	316 S.S.	316 S.S.	BRONZE
SEAT/SEAL	S.S.	S.S.	GRTFE	EPDM	GRTFE	GRTFE	BRONZE

GRTFE = GRAPHITE REINFORCED TFE

GENERAL NOTES:

1.) CARBON VESSELS ARE SILOXANE COATED CARBON STEEL.
2.) TOTAL SYSTEM WEIGHT (INCLUDING CARBON) = 18,500 lbs.
3.) CARBON IS WESTVACO [illegible] (3,500 lbs./TANK) BED DEPTH 27"
4.) INSULATION NOT SHOWN OR PROVIDED.
5.) CARBON SUPPORT & TOP SCREENS - # 18 GA. TITANIUM.
6.) ALLOW 6 FEET FROM ACCESS OPENING FOR CARBON SCREEN REMOVAL.
7) INTERCONNECTING DUCTWORK (NOT SHOWN) IS SUPPLIED BY OTHERS.

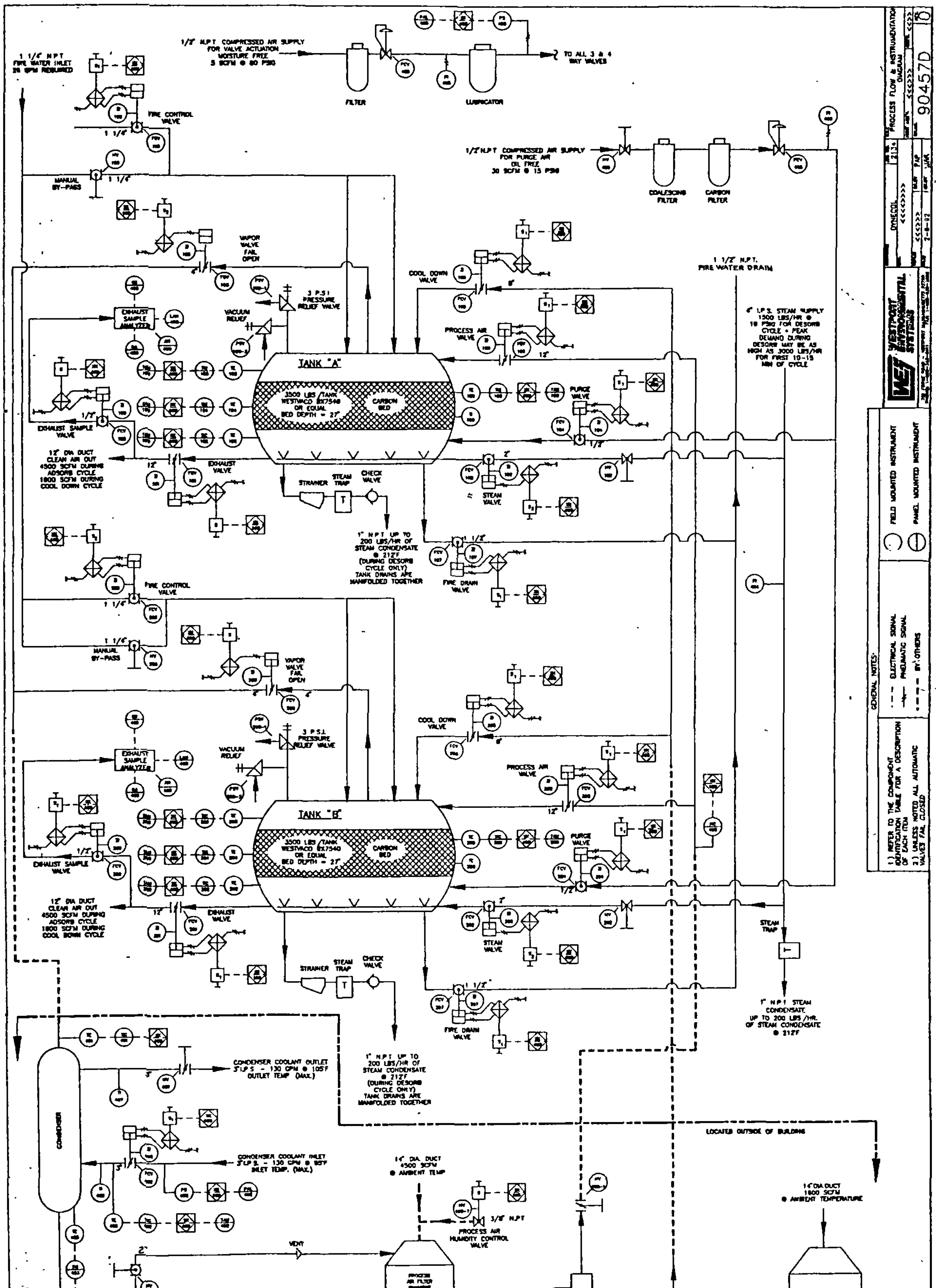




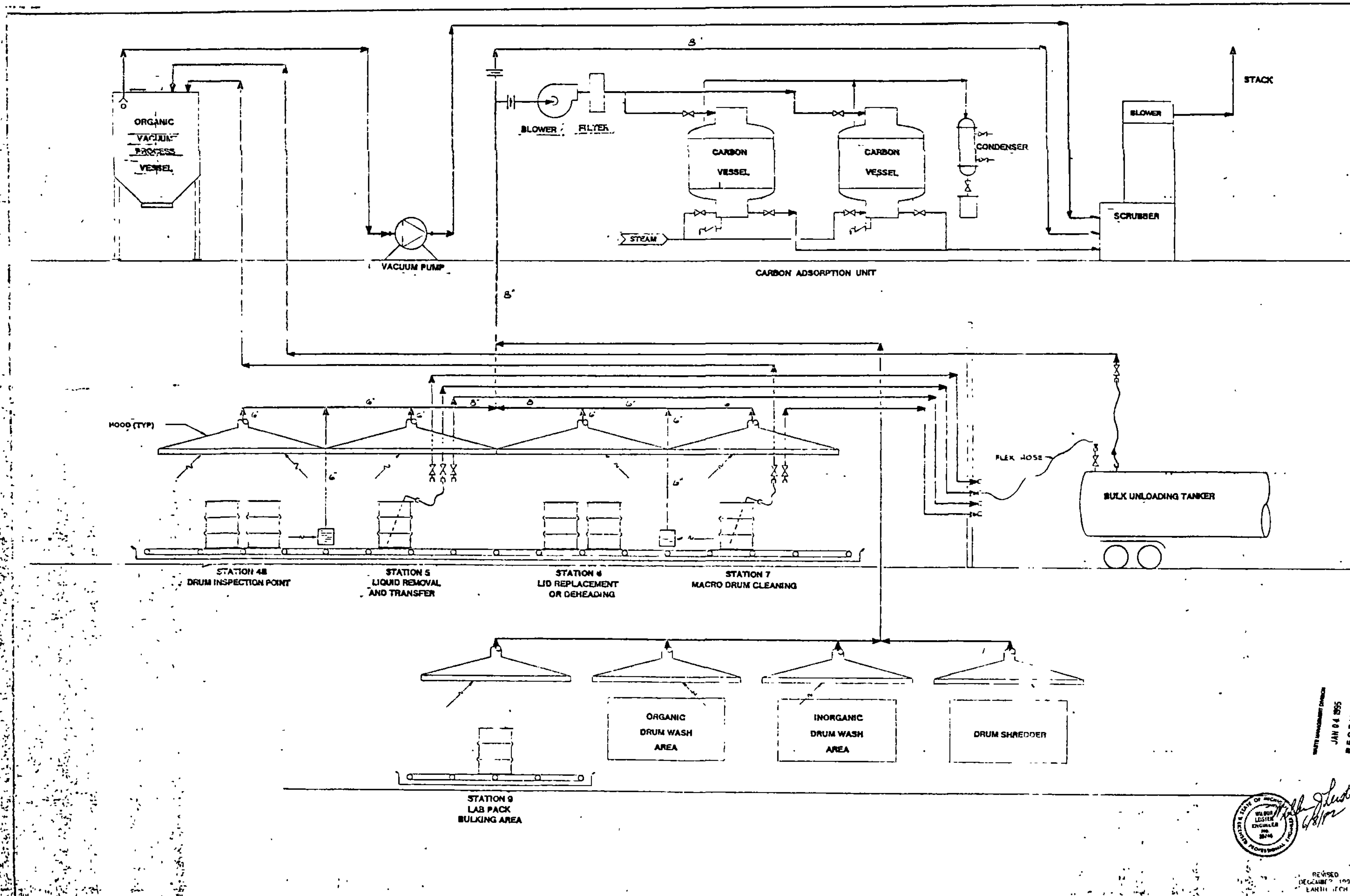
WESTPORT ENVIRONMENTAL SYSTEMS

CUSTOMER	DYNECOL
JOB NO.	2134
TITLE	SYSTEM LAYOUT AVRS - 96
SCALE	3/4" = 1'-0"
DATE	2-24-92
DWG.	904560
REV.	0

JAN 04 1995
RECEIVED



JAN 04 1995
RECEIVED



JAN 04 1995
RECEIVED

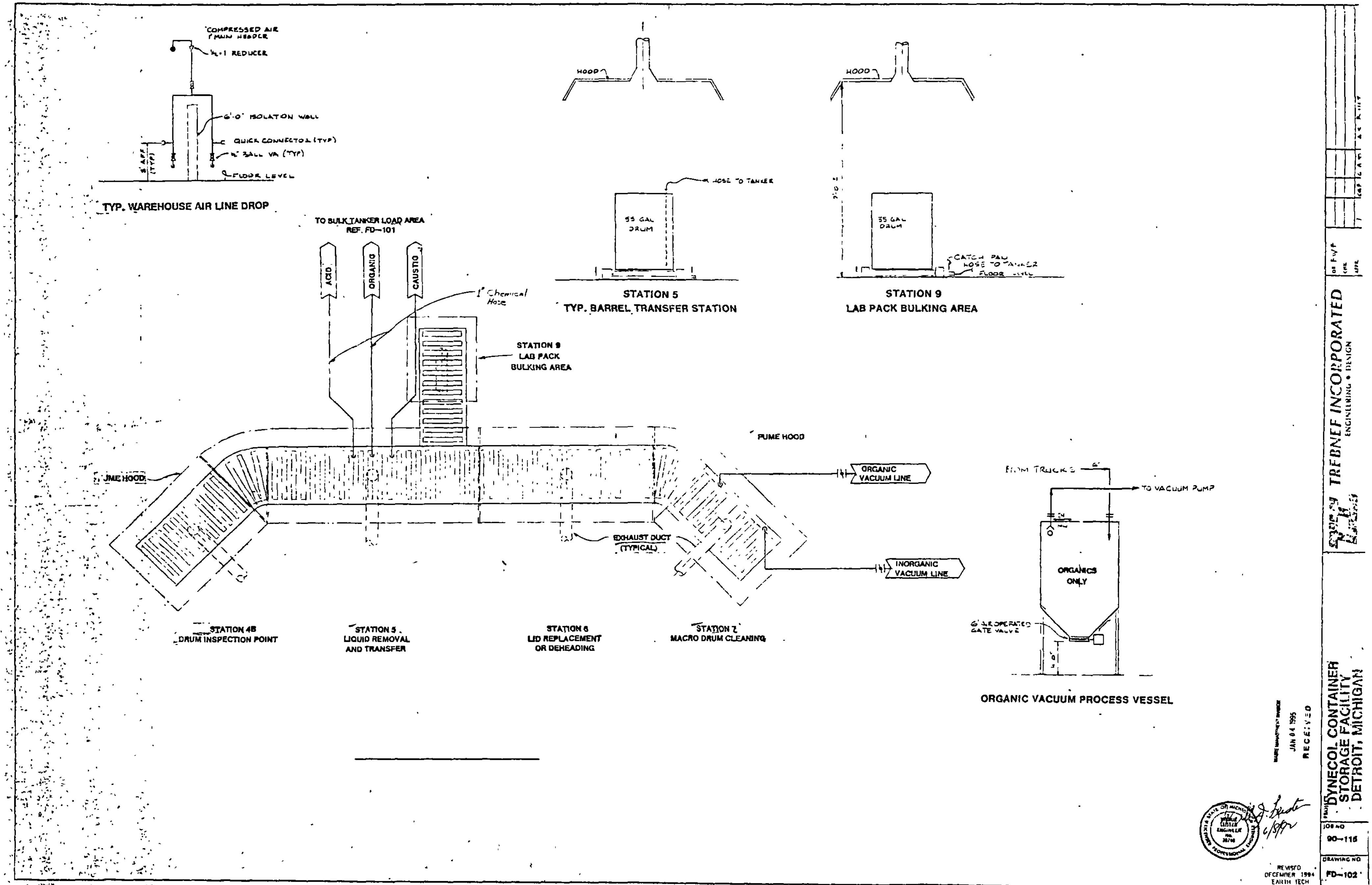
REVISED DECEMBER 1994

TREBNEF ENGINEERING CONSULTANTS
ENGINEERING • DESIGN

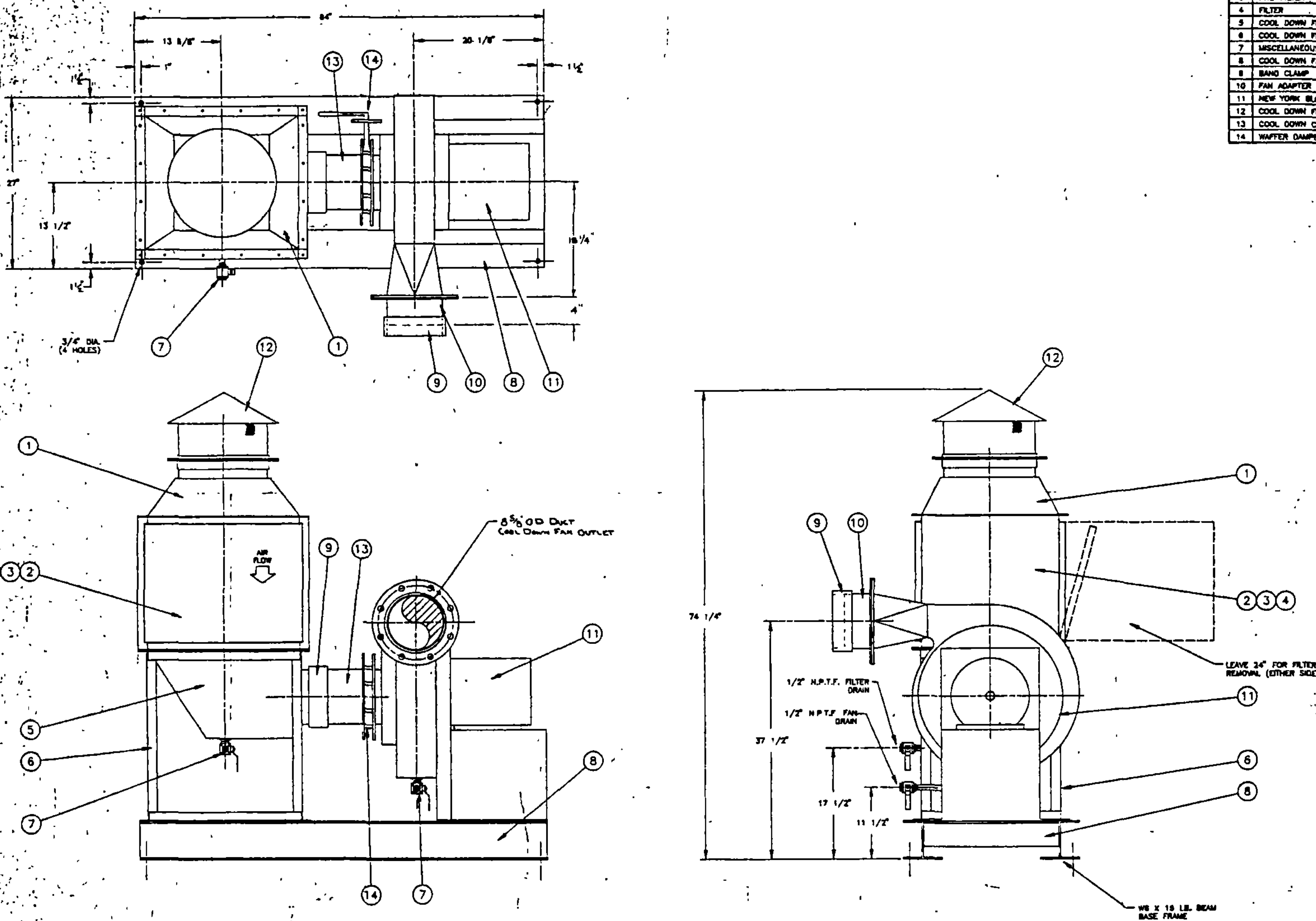
PROJECT DYNECOL INC. DRUM HANDLING FLOW DIAGRAM

JOB NO. 91-112

DRAWING NO DH-201


COMPRESSED AIR
6'-0" ISOLATION WALL
FLOOR LEVEL
TYP. WAREHOUSE AIR LINE DROP
HOOD
HOSE TO TANKER
55 GAL DRUM
STATION 5
TYP. BARREL TRANSFER STATION
STATION 9
LAB PACK BULKING AREA
TO BULK TANKER LOAD AREA
REF. FD-101
ACID
ORGANIC
CAUSTIC
1" Chemical Hose
STATION 9
LAB PACK
BULKING AREA
FUME HOOD
ORGANIC
VACUUM LINE
INORGANIC
VACUUM LINE
EXHAUST DUCT
(TYPICAL)
TO VACUUM PUMP
ORGANICS
ONLY
STATION 4B
DRUM INSPECTION POINT
STATION 5
LIQUID REMOVAL
AND TRANSFER
STATION 6
LID REPLACEMENT
OR DEHEADING
STATION 7
MACRO DRUM CLEANING
ORGANIC VACUUM PROCESS VESSEL
TREBNEF INCORPORATED
ENGINEERING • DESIGN
DYNECOL CONTAINER
STORAGE FACILITY
DETROIT, MICHIGAN
RECEIVED
JAN 04 1995
JOB NO
90-115
DRAWING NO
FD-102
REVISED
DECEMBER 1994
EARTH TECH

ITEM	DESCRIPTION	DWG.NO.	QTY
1	COOL DOWN FILTER INLET TRANSITION	802813C	1
2	GUIDE PACK	8558	1
3	PRE-FILTER	8560	1
4	FILTER	8561	1
5	COOL DOWN FILTER OUTLET TRANSITION	802414C	1
6	COOL DOWN FILTER SUPPORT FRAME	802816C	1
7	MISCELLANEOUS PIPING ASSEMBLY	904670	1
8	COOL DOWN FAN BASE	904718	1
9	BAND CLAMP	V30048AA	2
10	FAN ADAPTER DUCT	508808A	1
11	NEW YORK BLOWER 1708-A-7 1/2	<<O>>	1
12	COOL DOWN FILTER INLET COVER	851329A	1
13	COOL DOWN COLLAR WELDING ASS'Y	90469A	1
14	WAFFER DAMPER #AL-8	<<O>>	1



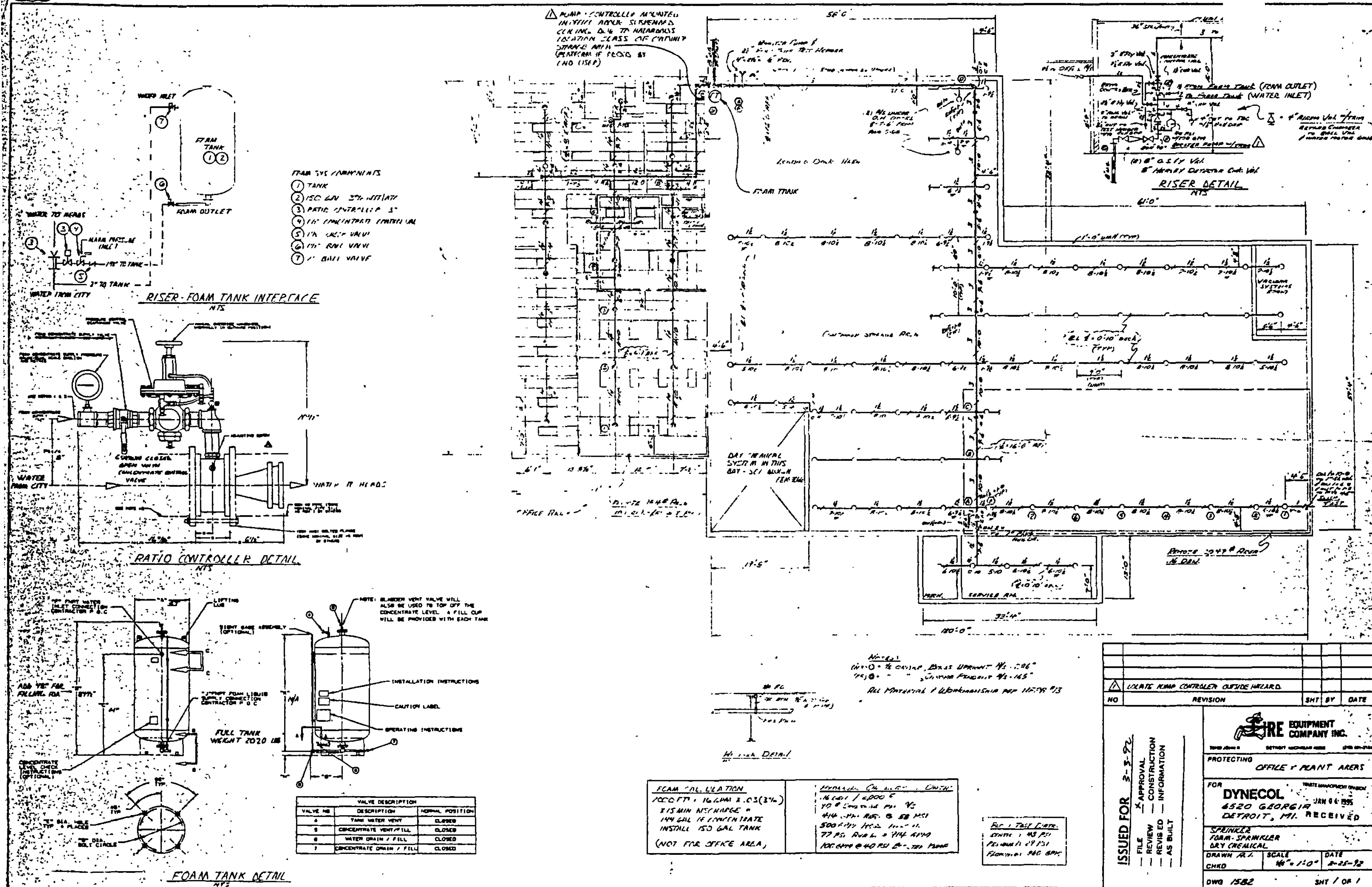
APPROXIMATE WEIGHT OF ASSEMBLY : 900 lbS.

WESTPORT ENVIRONMENTAL SYSTEMS

OYNECOL	2134	COOL DOWN FAN/FILTER ASSEMBLY	
SEE LEGEND		90458D	1
1/8" = 1"		90468D	1
2-13-92	UAR		

JAN 04 1995

RECEIV_D



VALVE DESCRIPTION		
VALVE NO	DESCRIPTION	NORMAL POSITION
4	TANK WATER VENT	CLOSED
5	CONCENTRATE VENT/FILL	CLOSED
6	WATER DRAIN / FILL	CLOSED
7	CONCENTRATE DRAIN / FILL	CLOSED

NO	REVISION	SHT	BY	DATE
1	LOCATE PUMP CONTROLLER OUTSIDE HAZARD			

ISSUED FOR 3-3-92
— FILE
X APPROVAL
— REVIEW
— CONSTRUCTION
— REVISED
— INFORMATION
— AS BUILT

FIRE EQUIPMENT COMPANY INC.

PROTECTING OFFICE & PLANT AREAS

FOR DYNECOL
6520 GEORGIA
DETROIT, MI.

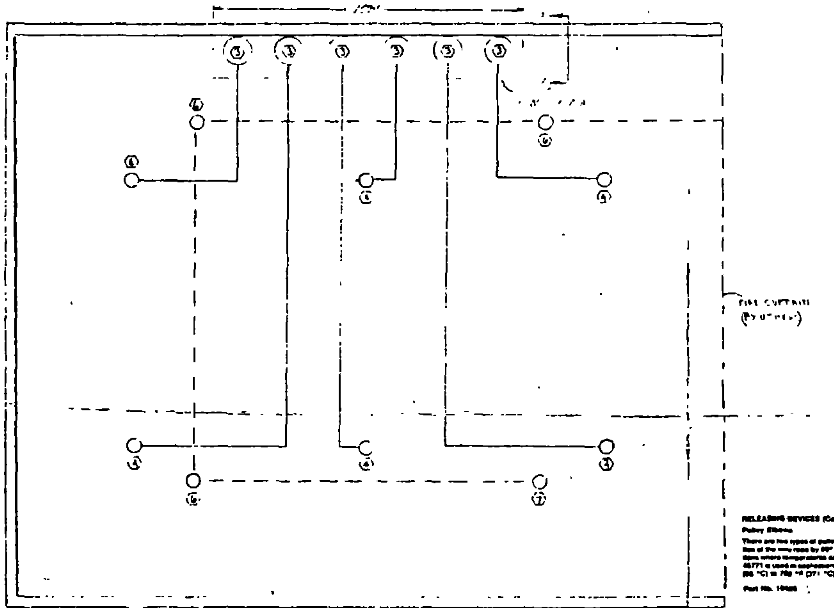
WASTE MANAGEMENT DIVISION JAN 04 1995 RECEIVED

SPRINKLER
FOAM-SPRINKLER
DRY CHEMICAL

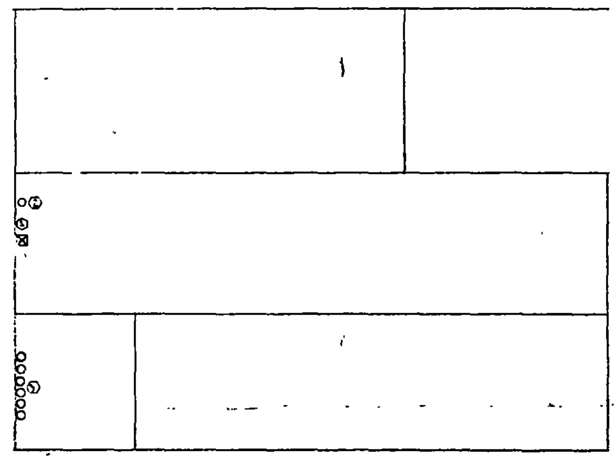
DRAWN R.I. | SCALE 1/8" = 1'-0" | DATE 2-25-92
CHKD

DWG 1582 SHT 1 OF 1

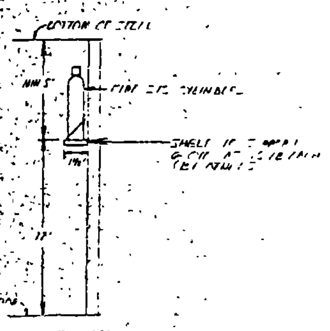
Ansul SPA-50
Industrial



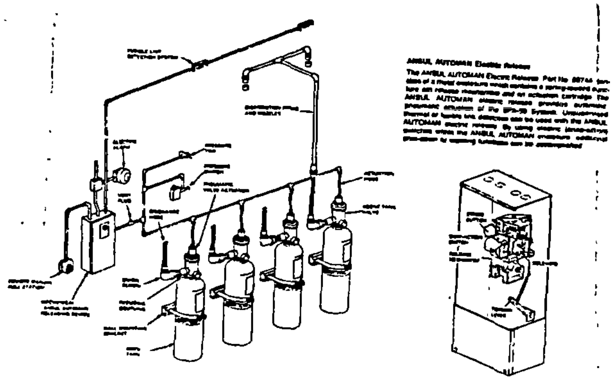
TOP VIEW
1/2"=1'-0" SCALE
CEILINGS HGT 15'

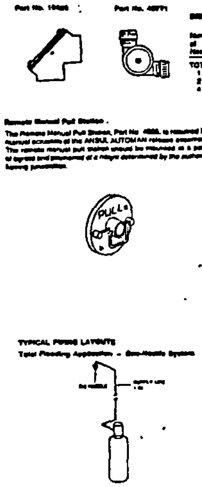


FLOOR PLAN
N.T.S.



SHELF DETAIL
N.T.S.





ANSUL SPA-50 ABC SYSTEM

ITEM	QTY	PART NO.	DESCRIPTION
1	1	32381	AUTOMAN RELEASE
2	1	4835	REMOTE PULL STATION
3.	6	56952	SPA-50 TANK
4	6	68352	D-2 NOZZLE
5.	6	68720	PNEUMATIC VALVE ACTUATOR
6	3	15373	SERIES DETECTOR
7	1	15375	TERMINAL DETECTOR
8.			
9			
10.			

NO	REVISION	SHT	BY	DATE

ISSUED FOR FEB 20 1992
— FILE
— REVIEW
— REVISED
— AS BUILT
X APPROVAL
— CONSTRUCTION
— INFORMATION

FIRE EQUIPMENT COMPANY INC.
DETROIT, MICHIGAN

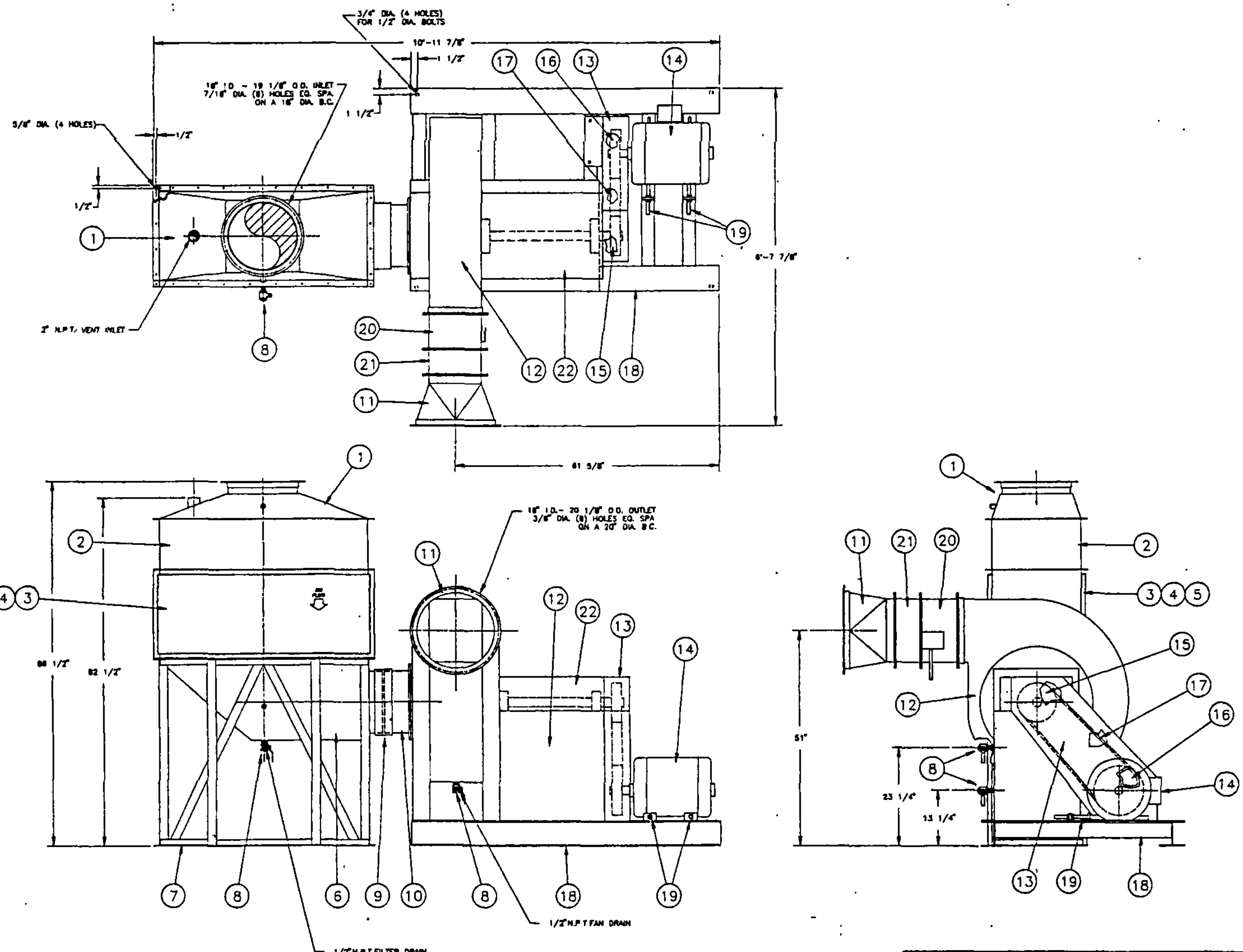
PROTECTING LAB. PAK. AREA

FOR DYNECOL INC. WASTE MANAGEMENT DIVISION
6520 GEORGIA
DETROIT, MI. 482
JAN 04 1995
RECEIVED

DRAWN M.D.T. | SCALE 1/2" = 1'-0" | DATE 2/19/92
CHKD
DWG FEK-3066 SHT 1 OF 1

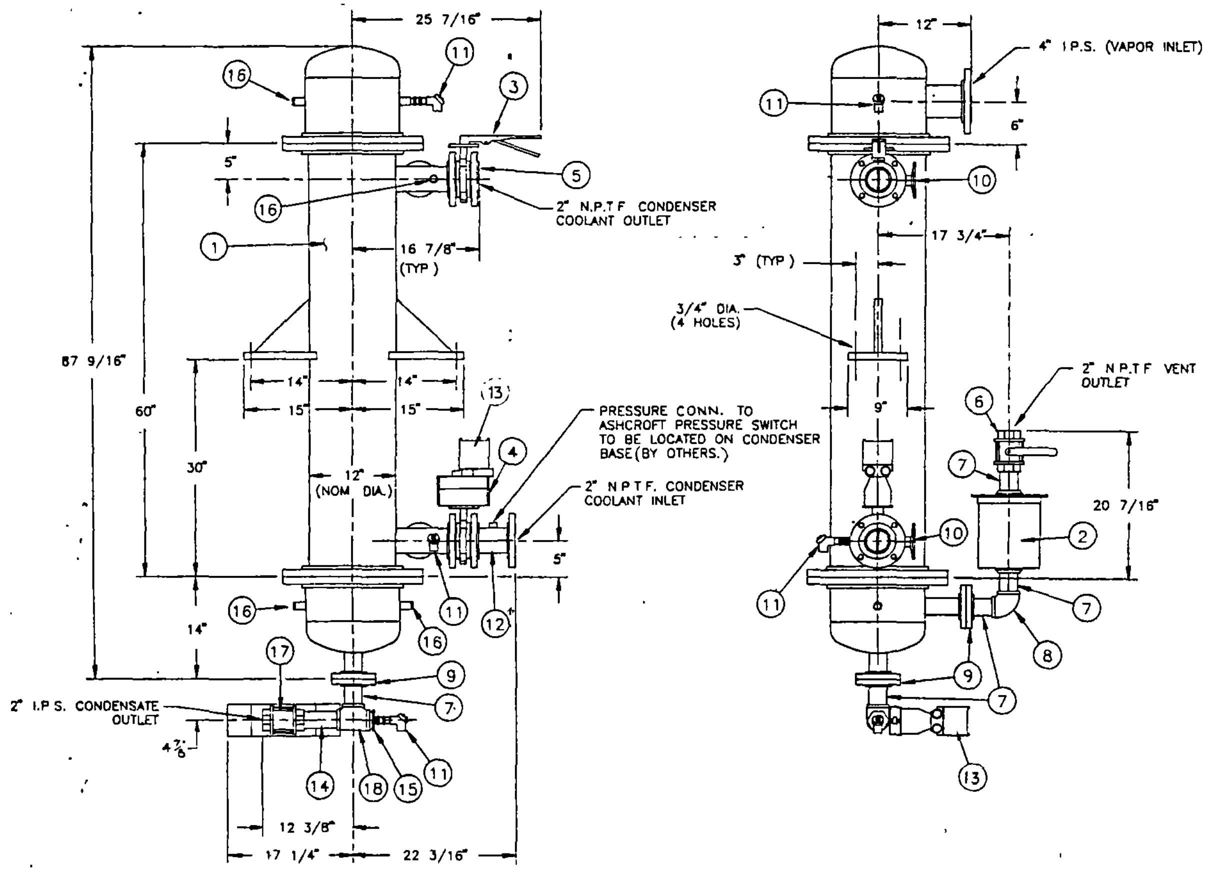
ITEM	DESCRIPTION	DWG.NO	QTY
1	INLET TRANSITION	90465C	1
2	DIFFUSER	8558	1
3	GLIDE PACK	8555	1
4	PRE-FILTER	8556	1
5	FILTER	8557	1
6	OUTLET TRANSITION	90465C	1
7	PROCESS FILTER BASE FRAME	90464C	1
8	MISCELLANEOUS PIPING ASSEMBLY	90467D	1
9	BAND CLAMP	90188A	1
10	FAN COLLAR PIECE	90474A	1
11	FAN OUTLET TRANSITION	90475B	1
12	PROCESS FAN (NYB # 284)	<<<>>>	1
13	BELT GUARD	90476C	1
14	PROCESS FAN MOTOR (#284T FRAME)	<<<>>>	1
15	FAN PULLEY (#5V-9.25)	<<<>>>	1
16	MOTOR PULLEY (#5V-11.8)	<<<>>>	1
17	BELT (#5V-900)	<<<>>>	3
18	PROCESS FAN BASE	90477C	1
19	FAN MOTOR ADJUSTABLE BASE	80280BB	2
20	OUTLET DAMPER (NYB #284)	<<<>>>	1
21	VIBRATION ISOLATOR	<<<>>>	1
22	SHAFT GUARD	90478C	1

GENERAL NOTES:
SEE VALVE CHART ON DWG # 90458D
FOR VALVE SPECIFICATIONS
APPROXIMATE WEIGHT OF ASSEMBLY = 2,300 lbs



WESTPORT ENVIRONMENTAL SYSTEMS	DYNECOL	2134	PROCESS FAN/FILTER ASS'Y AWRS-95
	<<<<>>>>		90458D — 1
	1/8" = 1'	TZ	90463D
	2-20-92	WAR	0

JAN 04 1995
RECEIVED



NO.	DESCRIPTION	QTY
18	2" N.P.T TEE - 304 S.S.	1
17	2" N.P.T. BALL VALVE #833F-304 S.S. W/790-301 ACTUATOR	1
16	1/2" N.P.T PLUG - C.S.	4
15	2" X 1/2" N.P.T REDUCING BUSHING - 304 S.S.	1
14	2" N.P.T X 6" LG. NIPPLE - 304 S.S.	1
13	KEYSTONE X-SWITCH ENCLOSURE	2
12	CONDENSER WATER INLET SPOOL PIECE (DWG. # 904784A)	1
11	TYPE "J" THERMOCOUPLE WELL / FITTINGS	3
10	1/2" N.P.T. TEMPERATURE GAGE (5" DIA.) 0-250°F	2
9	2" I.P.S. COMPANION FLANGE - 304 S.S.	2
8	2" N.P.T 90° ELBOW - 304 S.S.	1
7	2" N.P.T X 4" LG. NIPPLE - 304 S.S.	4
6	2" N.P.T BALL VALVE #833F - 304 S.S.	1
5	3" I.P.S. COMPANION FLANGE - C.S.	1
4	3" I.P.S. BUTTERFLY VALVE W/ 790-200 ACTUATOR	1
3	3" I.P.S. BUTTERFLY VALVE W/ HANDLE	1
2	SURGE CHAMBER ASS'Y (DWG. NO. 80985A/80986A)	1
1	CONDENSER (DWG. NO. 904828) 316 ss /CS	1

WESTPORT ENVIRONMENTAL SYSTEMS

DYNACOL

2134

CONDENSER FINAL ASSEMBLY

<<<<>>>>

<<<>>>

1

1/8"=1"

2-22-92

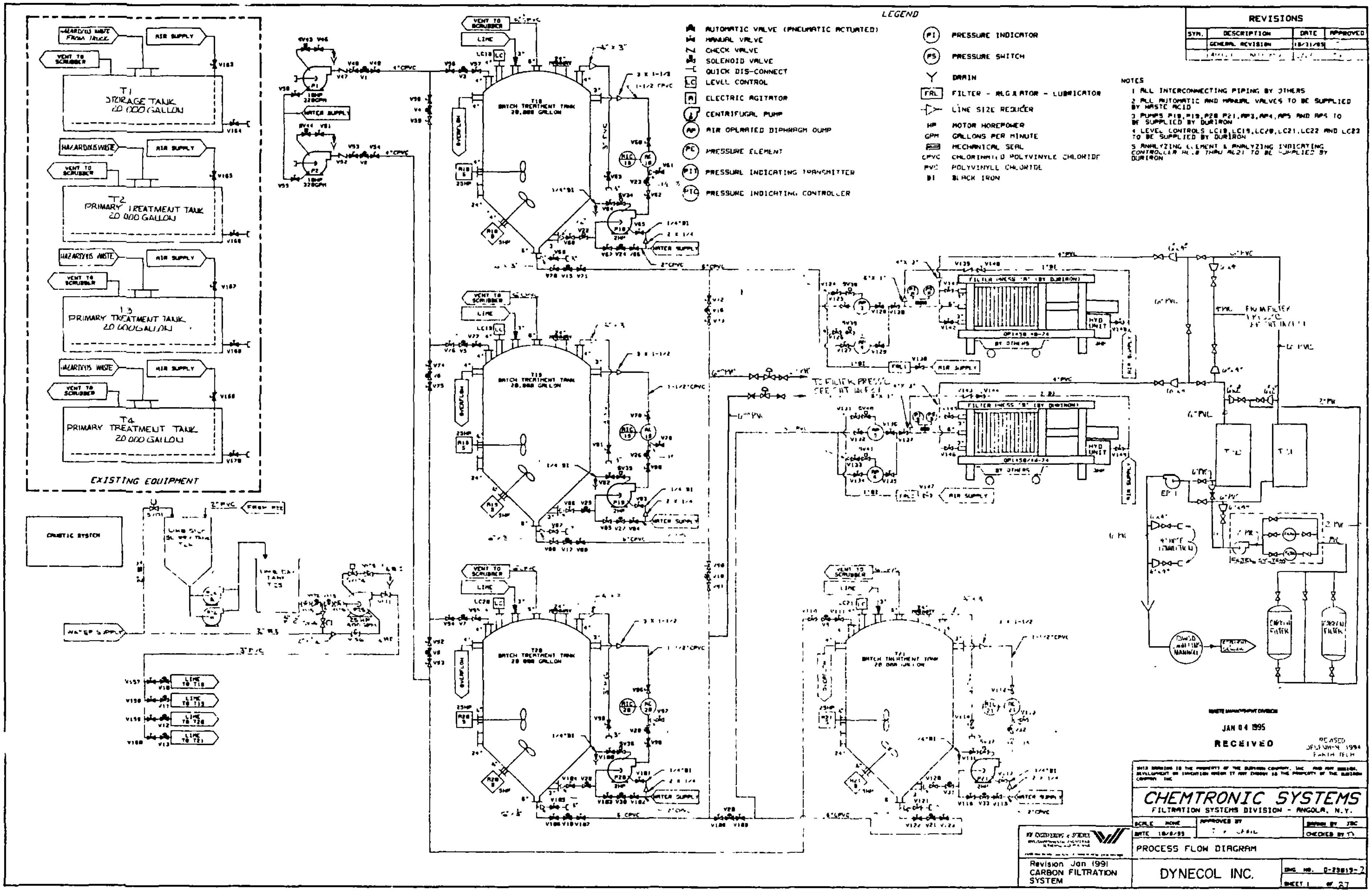
904730

0

ESTIMATED ASSY WEIGHT = 1,100 Lbs

JAN 04 1995

RECEIVED



LEGEND
AUTOMATIC VALVE (PNEUMATIC ACTUATED)
MANUAL VALVE
CHECK VALVE
SOLENOID VALVE
QUICK DIS-CONNECT
LC LEVEL CONTROL
A ELECTRIC AGITATOR
CENTRIFUGAL PUMP
AP AIR OPERATED DIAPHRAGM PUMP
PE PRESSURE ELEMENT
PIT PRESSURE INDICATING TRANSMITTER
PIC PRESSURE INDICATING CONTROLLER
PI PRESSURE INDICATOR
PS PRESSURE SWITCH
DRAIN
FRL FILTER - REGULATOR - LUBRICATOR
LINE SIZE REDUCER
HP MOTOR HORSEPOWER
GPM GALLONS PER MINUTE
MECHANICAL SEAL
CPVC CHLORINATED POLYVINYLE CHLORIDE
PVC POLYVINYLE CHLORIDE
BI BLACK IRON
REVISIONS
SYM. DESCRIPTION DATE APPROVED
GENERAL REVISION 10/31/89
NOTES
1 ALL INTERCONNECTING PIPING BY OTHERS
2 ALL AUTOMATIC AND MANUAL VALVES TO BE SUPPLIED BY WASTE ACID
3 PUMPS P18,P19,P20 P21,AP3,AP4,AP5 AND AP6 TO BE SUPPLIED BY DURIRON
4 LEVEL CONTROLS LC18,LC19,LC20,LC21,LC22 AND LC23 TO BE SUPPLIED BY DURIRON
5 ANALYZING ELEMENT & ANALYZING INDICATING CONTROLLER AL18 THRU AL21 TO BE SUPPLIED BY DURIRON
HAZARDOUS WASTE FROM TRUCK
AIR SUPPLY
VENT TO SCRUBBER
T1 STORAGE TANK 20 000 GALLON
T2 PRIMARY TREATMENT TANK 20 000 GALLON
T3 PRIMARY TREATMENT TANK 20 000 GALLON
T4 PRIMARY TREATMENT TANK 20 000 GALLON
EXISTING EQUIPMENT
CAUSTIC SYSTEM
WATER SUPPLY
LINE TO T18
LINE TO T19
LINE TO T20
LINE TO T21
T18 BATCH TREATMENT TANK 20,000 GALLON
T19 BATCH TREATMENT TANK 20,000 GALLON
T20 BATCH TREATMENT TANK 20 000 GALLON
T21 BATCH TREATMENT TANK 20 000 GALLON
FILTER PRESS "A" (BY DURIRON)
FILTER PRESS "B" (BY DURIRON)
BY OTHERS
HYD UNIT
WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED
REVISED DECEMBER 1994
EARTH TECH
CHEMTRONIC SYSTEMS
FILTRATION SYSTEMS DIVISION - ANGOLA, N.Y.
SCALE NONE
DATE 10/8/89
APPROVED BY
DRAWN BY JBC
CHECKED BY
PROCESS FLOW DIAGRAM
Revision Jan 1991
CARBON FILTRATION SYSTEM
DYNECOL INC.
DWG. NO. D-29819-2
SHEET 1 OF 27

DESIGN CONDITIONS		MODEL NO. CV9-120-10036 P S/N 53764 12	185 str side
SP GR	PRESSURE	FOUNDATION REQD. Supported by legs	
1.2	ATMOSPHERIC, VENTED	INNER SURFACE Double Glass veil	
CONTENTS		CAPACITY 10036 US gallons, total	

TANK CONSTRUCTION

ITEM	TOP HEAD		[illegible] WALL	SIDE WALL	Conical BOTTOM		FALSE BOTTOM	TOP [illegible] CASE	SIDEWALL [illegible] CASE	LUG [illegible]	[illegible] RESIN	[illegible] RESIN	GLASS TYPES	GLASS WTS
THK	375		33		.8								VEIL	14
WT RESIN	22		117		27								CHOP	366
WT VEIL	183(2)		8.79(2)		2.22(2)								WR	395
WT RESIN	173		204		207								F/W	85
WT CHOP	86		147		133								UNI	
WT RESIN	20				180						TOTAL	TOTAL	1-1/2 OZ	19
WT F/W	11(0)	UNI —			84(4)						1381			
WT RESIN			184							34	GROSS USAGE			2599
WT WR			327(3)							68(2)	TOTAL FRP NET WT (TRIMMED)			2260

TOTAL ACCESSORY WT 1097 — JOINT (S) 58 — INSULATION WT — BALSA — sq. ft.

TOTAL TANK WT 3357 #

CURE SYSTEM REQD. Co/MEK peroxide with no post cure

TESTING REQD. None

4 H/D Lugs at 8 inches, with 4 Lifting Lugs at 10°

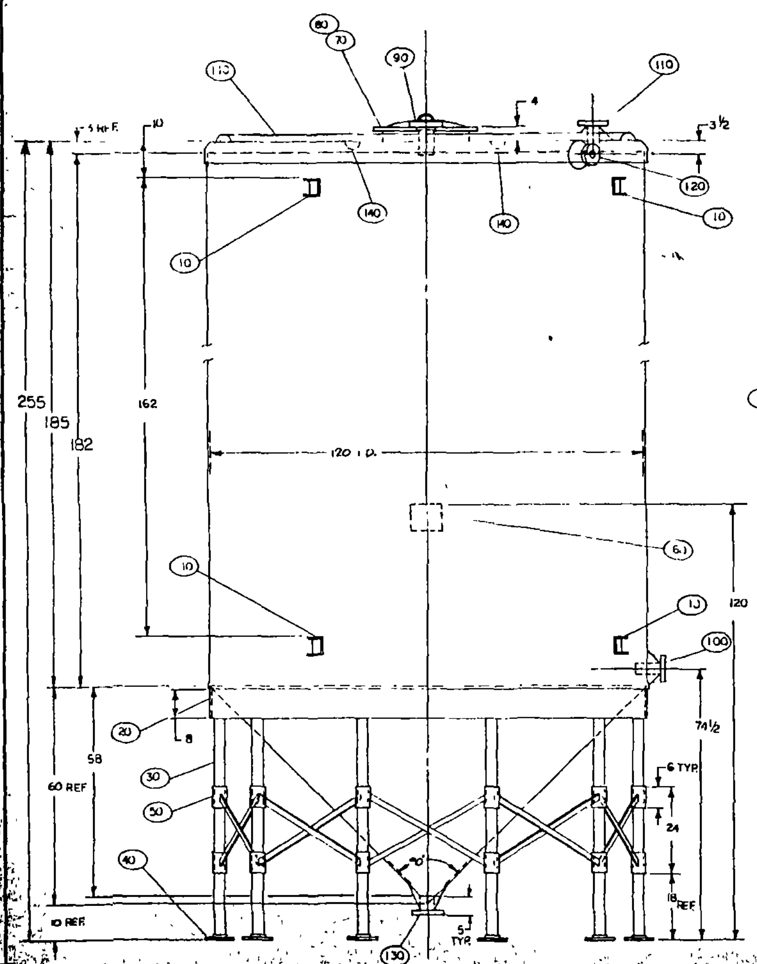
DIGITAL DATA

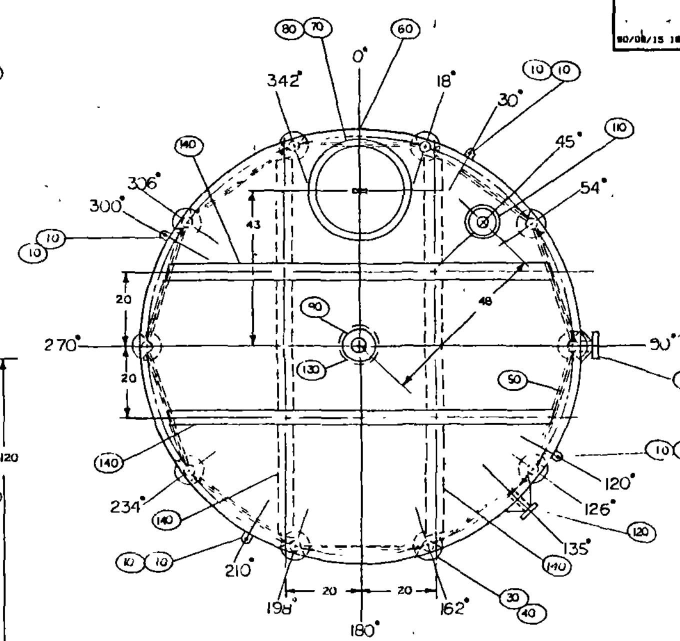
CHOP RATIO	ST WND RATIO	HELIX/WND RATIO	Y-COUNT	H-COUNT	[illegible]	LENGTH	GLASS WT
418	88	8	1208	1484	2/16	188.7	310
		8	1202	38	1/16	18.2	17

NOTES

1-Tank to be built to P.E.C. Engineering Standard Specifications
2-All flanges to be 150# A.N.S.I. drilled. Gasket Must be full face type
3-Flange boltholes are to straddle the centerline unless otherwise specified
4-Tank must have FREE VENTING with flow capacity equal to or larger than largest nozzle or fitting
5-See resin manufacturer's literature for strength and corrosion ratings vs. temperature
6 TANK DESIGNED FOR SEISMIC ZONE 0, 0 MPH WINDLOAD
7 Load tank with 300° down. Loaded width of 126 inches, approx.

90/08/15 10:30:57





ORIENTATION PER CUSTOMERS ORIENTATION A

VERT. DIMS NOT TO SCALE

SEP 2 7 1994

Item	Reqd.	Descrip.	Mat'l.
[illegible]	4	[illegible]	STD x 126 LG FRP
130	1	INTEGRAL FLG	4 IPS w/ CONICAL GUSSET FRP
120	1	INTEGRAL FLG	2 IPS w/ CONICAL GUSSET FRP
110	1	INTEGRAL FLG	3 IPS w/ CONICAL GUSSET FRP
100	1	INTEGRAL FLG	3 IPS w/ CONICAL GUSSET FRP
70	1	FLANGE NOZ	4 IPS (VENT) FRP
80	1	COVER w/ [illegible]	28 DIA FRP CS
70	1	MANHOLE [illegible]	24 DIA FRP
60	1	NAME PLATE	[illegible]
50	1	[illegible] LEG [illegible]	PER [illegible] CS PRIMED
40	10	FLOOR FLANGE	[illegible] CS PRIMED
30	10	PIPE LEG (TBE)	[illegible] CS PRIMED
20	1	SKIRT [illegible]	[illegible] CS PRIMED
10	8	LIFTING LUGS	TYPE #2 CS ENPL.
	1	FILAMENT WINDING	VINYLESTER [illegible]
	1	CORROSION BARRIER	VINYLESTER [illegible]

	Revision	Date
B	[illegible]	8/[illegible]/90 AG

Viatec

PROCESS [illegible] DIVISION
500 [illegible] St
PO Box [illegible]
[illegible], MI [illegible]

JAN 0 4 1995

RECEIVED

Title: CV9C-120-10036P TANK (1) REQD.

Cust. DYNACOL

S/N 53764

Drn. by AG

Dwg. No. DFT-900541.02-1

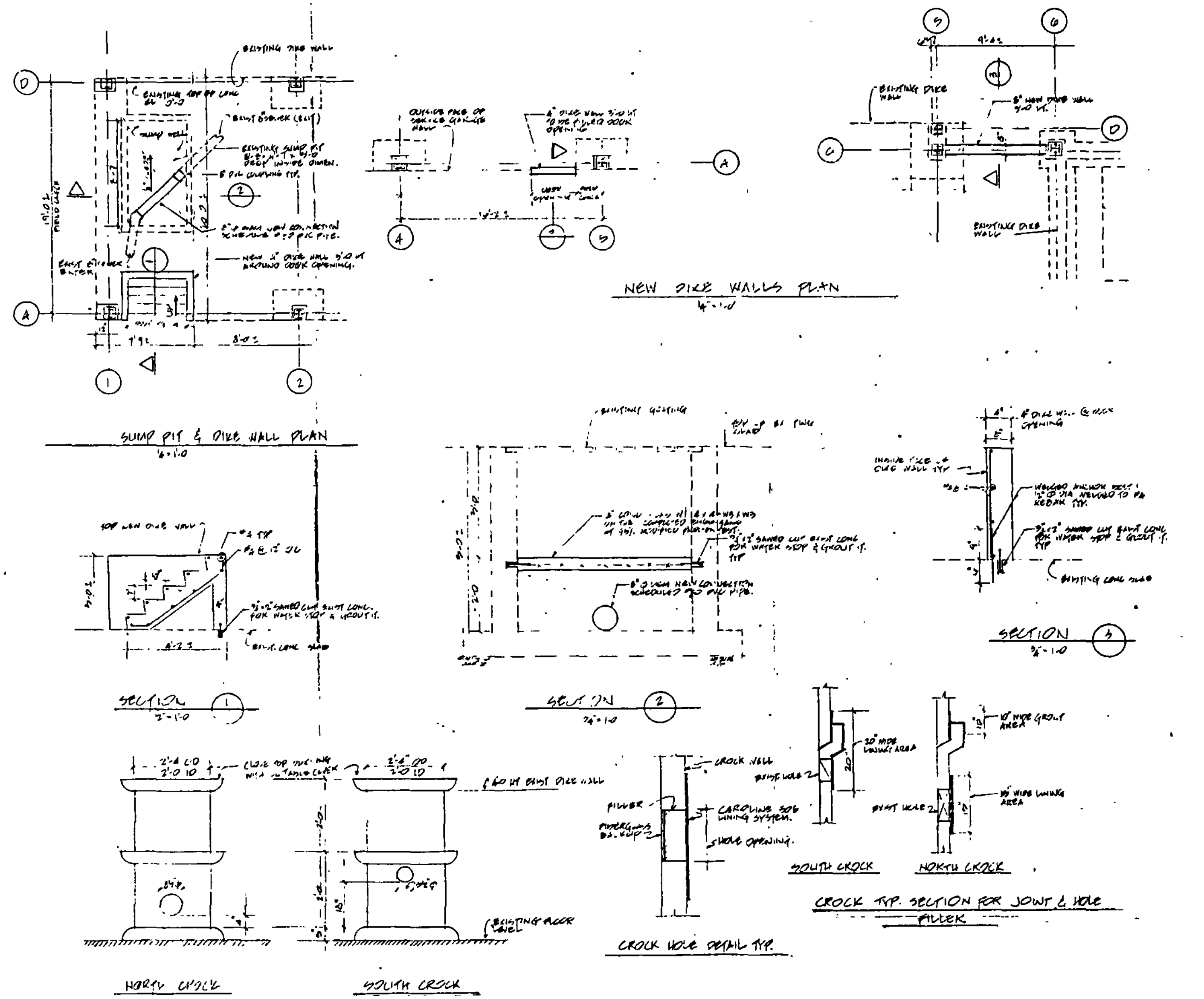
Date 8-16-90

Scale 1" = 1/16"

Sheet 1 of 1

JM8

TANK # 27



MATERIAL SPECIFICATION:

MATERIAL:

Caroline 505 an epoxy based fiberglass reinforced lining system installed 1/8" thick.

FILLING HOLE:

Hole in crock will be patched as follows.

1. Install a back-up plate-such as a hard piece of fiberglass sheeting.
2. Fill crack hole cavity with caroline 505 resin and powder filler.
3. After this has set up line this filler area, and exterior of wall with the caroline 505 lining system.

NOTES:

1. Refer sheet no. a-1 for general note.
2. Provide 3/4" x 2" sawed cut or chisel cut between existing concrete surface or existing brick wall and new concrete construction to have intalled water-stop as shown in the sections.
3. All dike walls and floor should be coated with CEILCOTE flakeline epoxy coating or equivalent.
4. 3'-0" height of existing service garage brick wall and new dike walls are capable to resist fluid pressure in the dike.
5. REFER SHT NO S-1 FOR SUMP PIT & DIKE WALLS LOCATION.
6. TOTAL VOLUME OF DIKE SHALL BE [illegible] CU.FT.

Dynecol, Inc. - 1986 Act 64
License Reapplication

NO.	REVISION	DATE

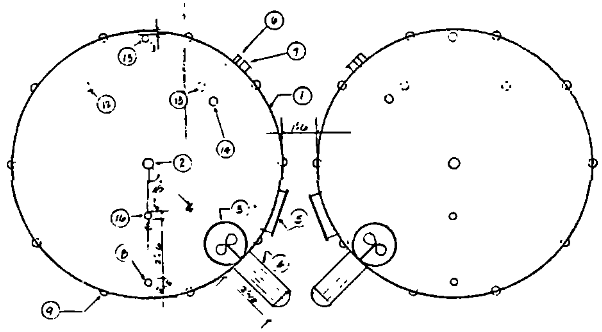
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
[illegible] WESTMORELAND
DETROIT, MICH. [illegible]

OWNER
DYNECOL, INC.
[illegible] GEORGIA ST.
DETROIT, MICH. 48211

WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED

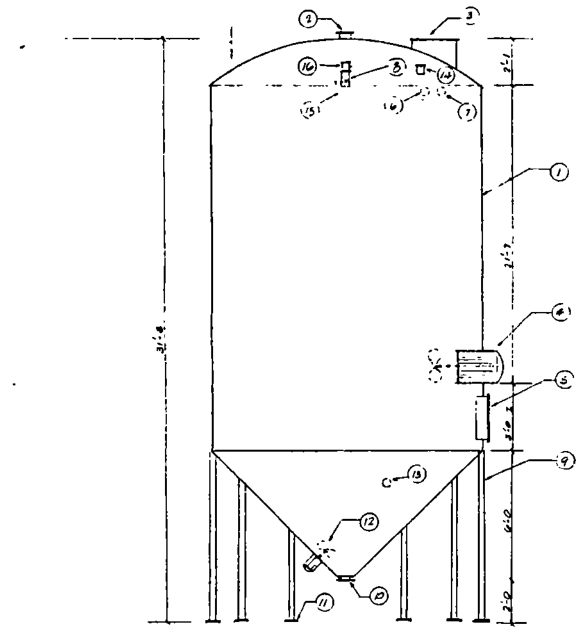
TITLE
SUMP PIT AND NEW DIKE WALL PLANS & SECTIONS

SCALE AS NOTED	DATE	PROJECT NO.
DRAWN BY [illegible]	4-27-87	
DESIGNED BY [illegible]	4-21-87	SHEET NO.
CHECKED BY [illegible]	5- - -87	A-1 OF 1
APPROVED BY		



TOP PLAN VIEW - CONE FIBERGLASS TANK

1/8" = 1'-0" 20,000 GALLON CAPACITY



TANK A & C, IDENTICAL FOR B & D TANK

FRONT ELEVATION VIEW - CONE FIBERGLASS TANK

NOT TO SCALE

NOTE

SUPPLIER OR FABRICATOR SHALL COORDINATE WITH ENGINEER FOR ANY DISCREPENCY

ITEM NO	DESCRIPTION OF ITEMS ON EACH TANK
1	20,000 GALLON CONE FIBERGLASS TANK 12'-6" Φ DIA
2	6" FLANGE, TANK VENT
3	24" Φ DIA MANWAY
4	AGITATOR MOTOR WITH FLANGE
5	24" Φ DIA MANWAY
6	3" FLANGE, PH LOOP INLET
7	4" FLANGE, TANK OVERFLOW
8	4" FLANGE, WASTE INLET
9	3" Φ DIA PIPE TANK LEG
10	6" FLANGE, TANK OUTLET
11	BASE PLATE
12	AGITATOR MOTOR WITH FLANGE
13	PH LOOP OUTLET 3" Φ DIA FLANGE
14	4" LEVEL CONTROL FLANGE
15	4" TRANSFER INLET FLANGE
16	3" FLANGE, LIME INLET

Dynecot, Inc. - 1988 Act 64 License Reapplication

NO.	REVISION	DATE

CONSULTING ENGINEERS

CHEMTEC RESEARCH ASSOCIATES, INC.

16241 WESTMORELAND
DETROIT, MICH 48219

OWNER

WASTE ACID SERVICES, INC.

6520 GEORGIA ST
DETROIT, MICH. 48211

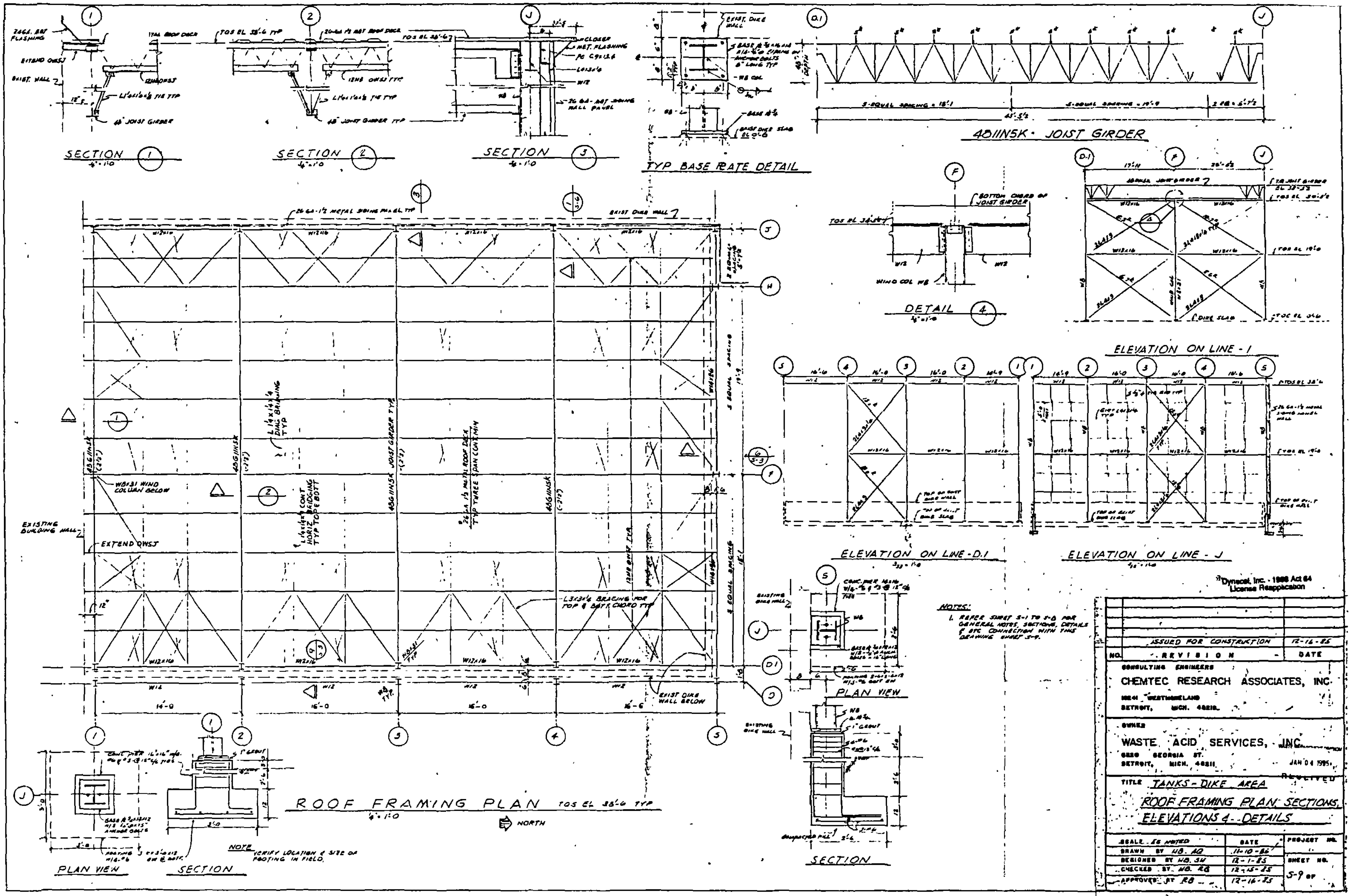
WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED

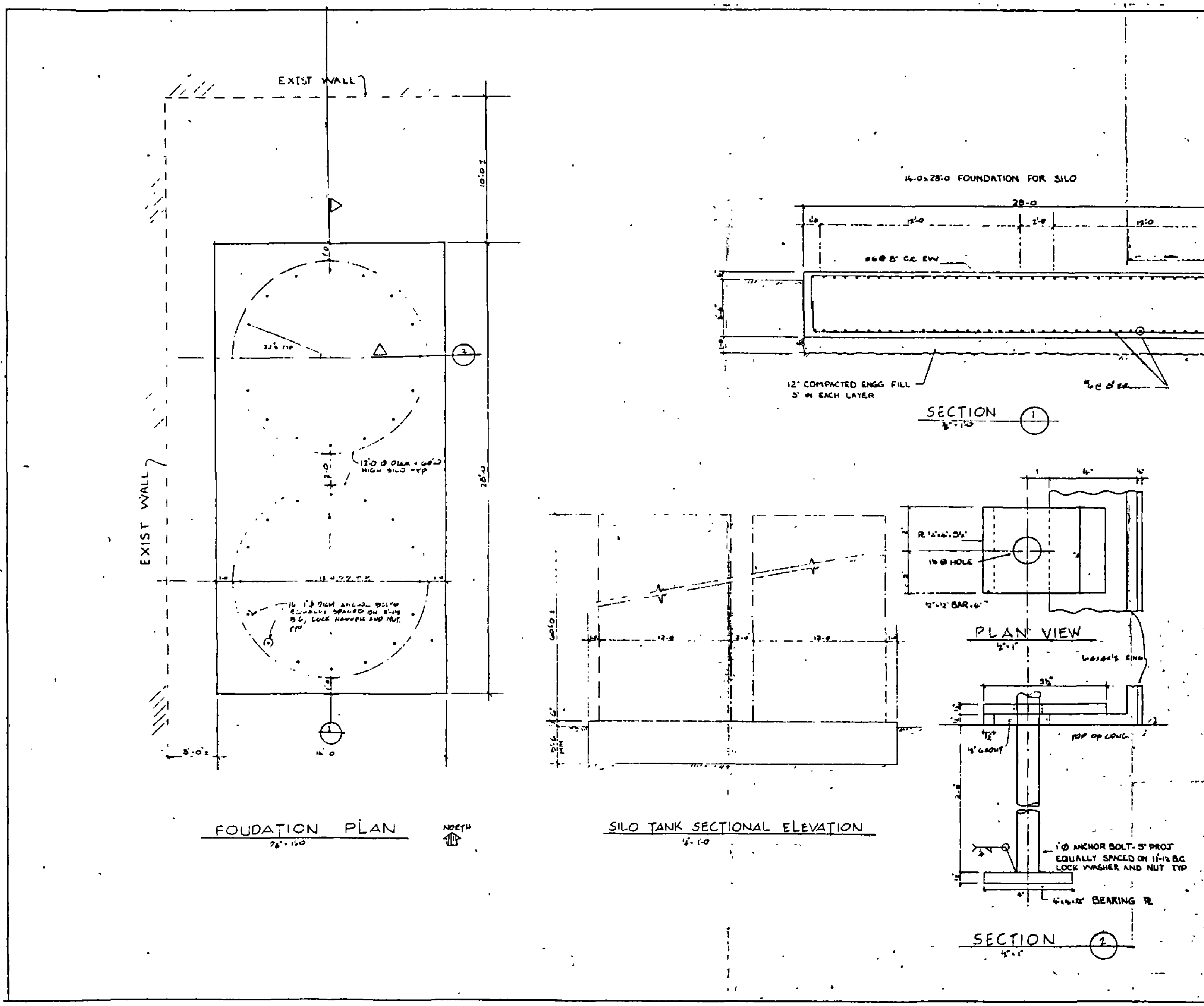
TITLE

PLAN & ELEVATION
CONE FIBERGLASS TANK

SCALE: AS NOTED	DATE	PROJECT NO.
DRAWN BY HB	SEPT. 12, 85	
DESIGNED BY RB	SEPT 11, 85	SHEET NO
CHECKED BY RB	SEPT. 13, 85	1 OF 1
APPROVED BY RB	SEPT 13, 85	

1


SECTION 1
SECTION 2
SECTION 3
TYP BASE PLATE DETAIL
48IIN5K - JOIST GIRDER
DETAIL 4
ELEVATION ON LINE - 1
ELEVATION ON LINE - D.1
ELEVATION ON LINE - J
ROOF FRAMING PLAN TOS EL 38'-6 TYP
NORTH
EXISTING BUILDING WALL
EXTEND OWSJ
W8x31 WIND COLUMN BELOW
L3x3x¼ BRACING FOR TOP & BOTT CHORD TYP
EXIST DIKE WALL BELOW
PLAN VIEW
SECTION
NOTE VERIFY LOCATION & SIZE OF FOOTING IN FIELD.
NOTES:
1. REFER SHEET S-1 TO S-8 FOR GENERAL NOTES, SECTIONS, DETAILS & ETC CONNECTION WITH THIS DRAWING SHEET S-9.
Dynacel, Inc. - 1986 Act 64 License Reapplication
ISSUED FOR CONSTRUCTION 12-16-85
NO. REVISION DATE
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
DETROIT, MICH.
OWNER
WASTE ACID SERVICES, INC.
DETROIT, MICH.
JAN 04 1995
TITLE TANKS - DIKE AREA
ROOF FRAMING PLAN, SECTIONS, ELEVATIONS & DETAILS
SCALE AS NOTED
DRAWN BY HB. AG 11-10-85
DESIGNED BY HB. SH 12-1-85
CHECKED BY HB. RB 12-15-85
APPROVED BY RB 12-16-85
SHEET NO. S-9



GENERAL NOTE:

1. Steel silos raft foundation is designed for soil pressure of 2000 psf at the depth indicated. Contact the engineer for correction action.
2. All concrete shall have a 28 day compressive strength of 3000 psi min.
3. Reinforcement steel yeild strength shall be grade of 60,000 psi unless noted otherwise.
4. Contractor shall verify location of foundation layings with plant operator before casting footing and slab if plant is required to be shutdown.
5. The standards of ACI Building Code 318-83 and the standards of practice ACI 315-80 shall be followed for all detailing, fabrication and placement of all reinforcing steel and accessories.
6. All fill under slab foundation and footings shall be compacted to 95% of maximum density (Modified Proctor Test) at optimum moisture content.
7. Provide temporary bracing as required to insure the stability of existing and new structures.
8. Contractor shall coordinate with engineer during construction activities for any discrepancy.

Dynecol, Inc. - 1988 Act 64 License Reapplication

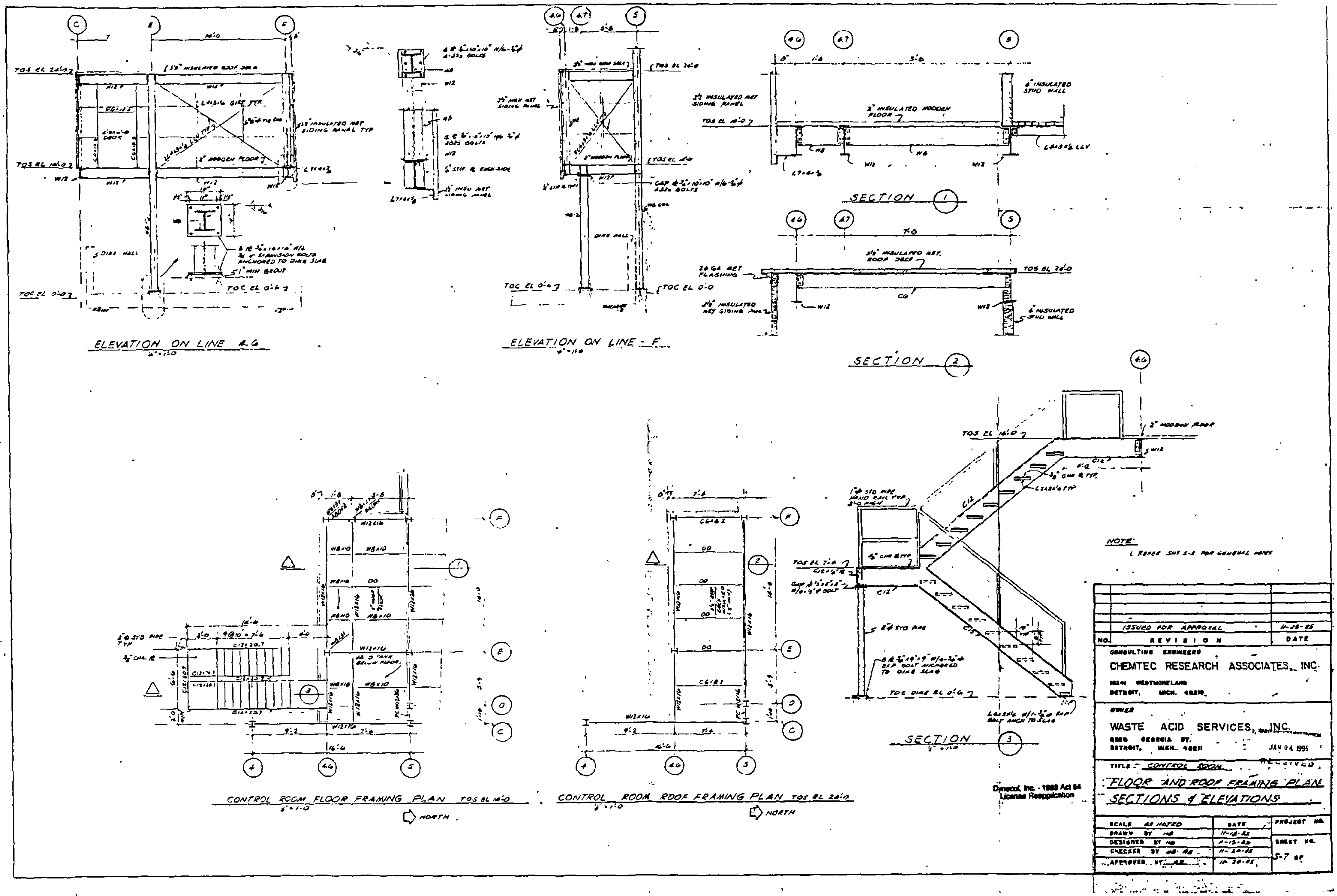
NO.	REVISION	DATE
	ISSUED FOR CONSTRUCTION	12-06-85

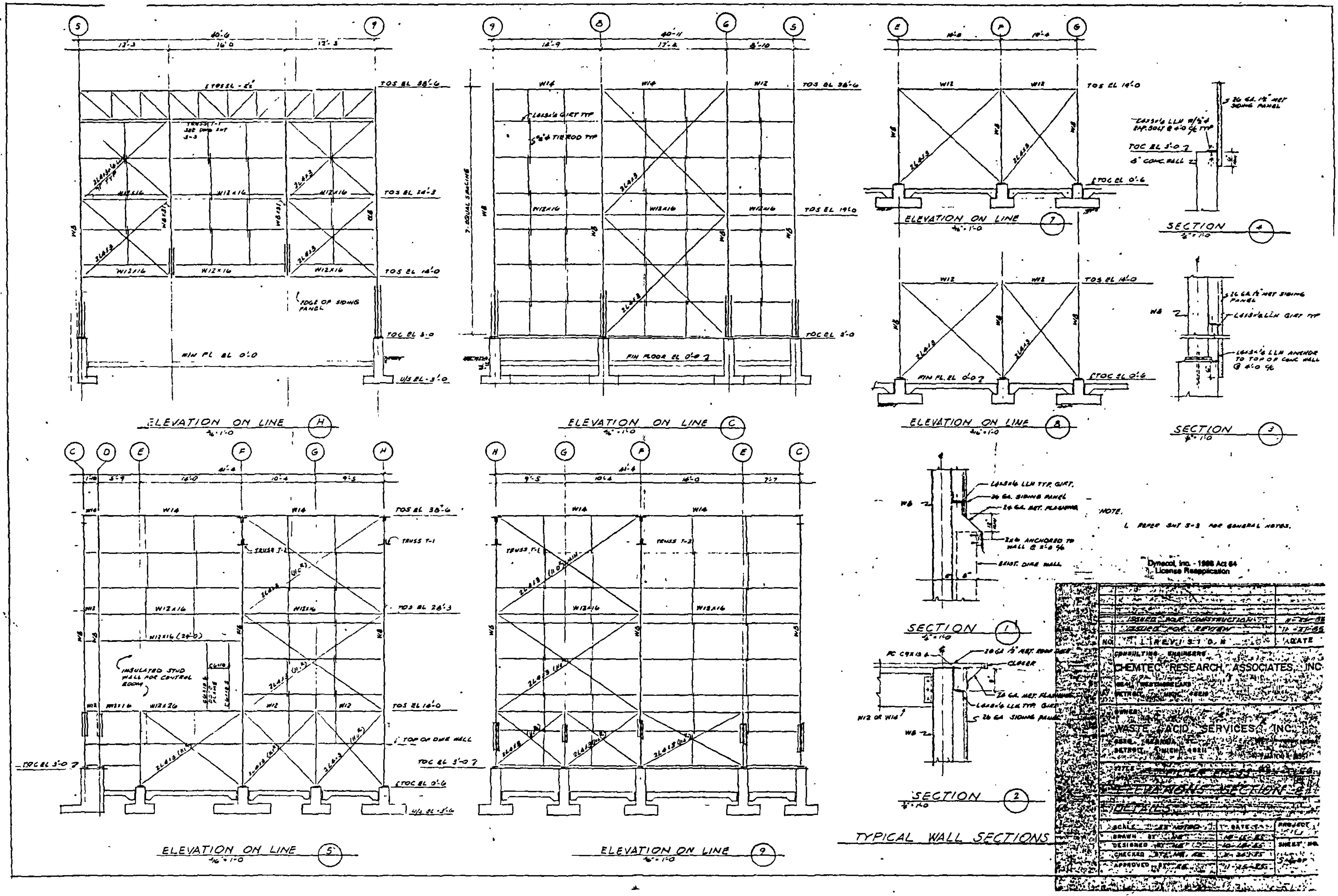
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
DETROIT, MICH.

OWNER
WASTE ACID SERVICES, INC.
GEORGIA ST.
DETROIT, MICH.

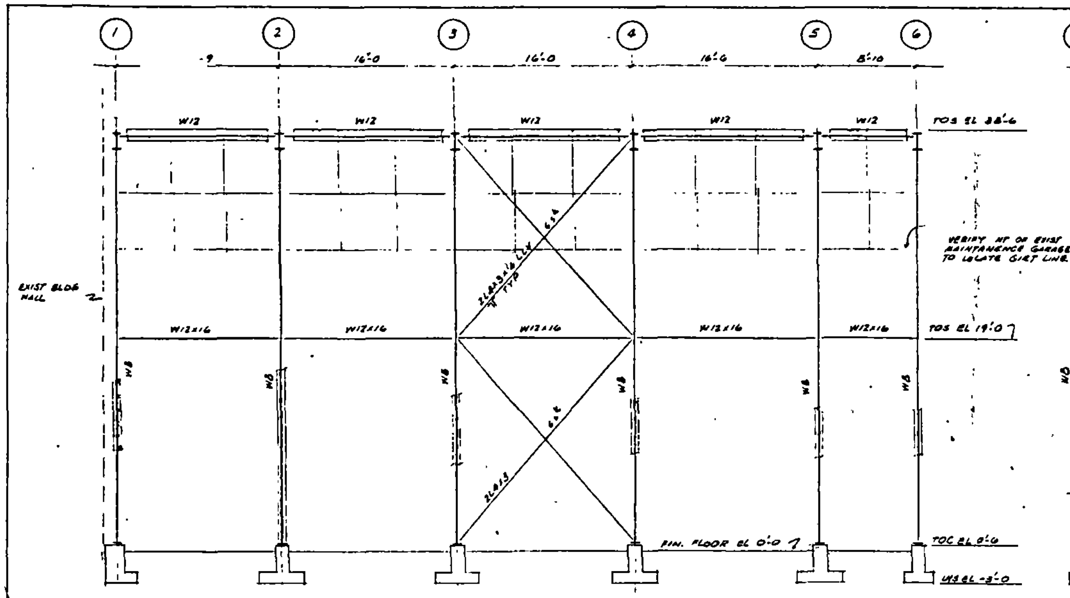
TITLE
SILO TANKS
FOUNDATION PLAN
SECTIONS & DETAILS

SCALE	DATE	PROJECT NO.
DRAWN BY	[illegible]	
DESIGNED BY	[illegible]	SHEET NO.
CHECKED BY	12-4-85	5-8
APPROVED BY	[illegible]	


ELEVATION ON LINE 4.6
ELEVATION ON LINE - F
SECTION 1
SECTION 2
SECTION 3
CONTROL ROOM FLOOR FRAMING PLAN TOS EL 16'-0
CONTROL ROOM ROOF FRAMING PLAN TOS EL 26'-0
NORTH
NOTE:
1. REFER SHT S-2 FOR GENERAL NOTES
Dynecol, Inc. - 1985 Act 64 License Reapplication
ISSUED FOR APPROVAL
NO.
REVISION
DATE
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
WESTMORELAND
DETROIT, MICH.
OWNER
WASTE ACID SERVICES, INC.
GEORGIA ST.
DETROIT, MICH.
JAN 04 1995
RECEIVED
TITLE - CONTROL ROOM
FLOOR AND ROOF FRAMING PLAN
SECTIONS & ELEVATIONS
SCALE AS NOTED
DATE
DRAWN BY
DESIGNED BY
CHECKED BY
APPROVED BY
PROJECT NO.
SHEET NO.
S-7 OF

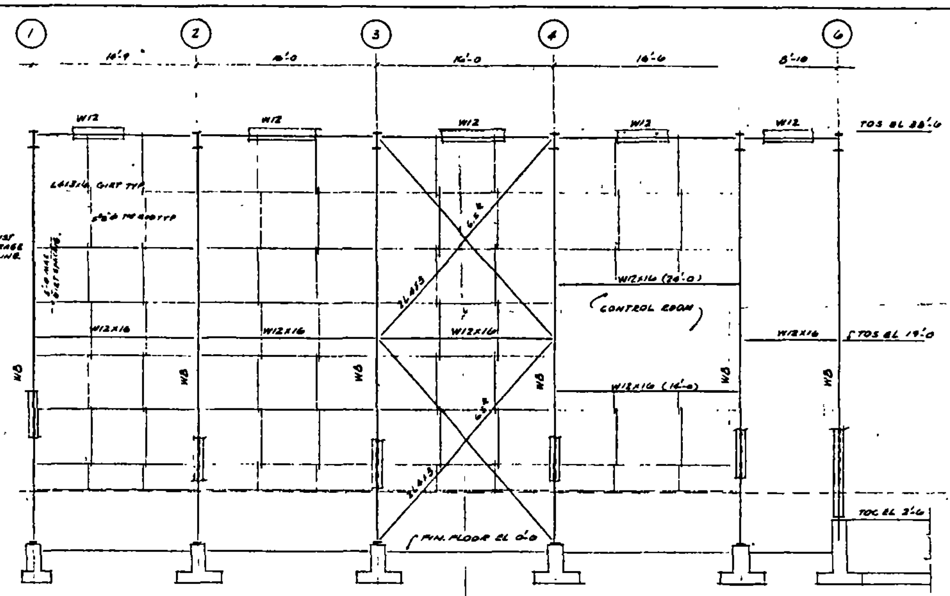


ELEVATION ON LINE H
ELEVATION ON LINE C
ELEVATION ON LINE 7
ELEVATION ON LINE 8
SECTION 4
SECTION 3
SECTION 1
SECTION 2
ELEVATION ON LINE 5
ELEVATION ON LINE 9
TYPICAL WALL SECTIONS
NOTE.
Dynecol, Inc. - 1988 Act 64
License Reapplication
CHEMTEC RESEARCH ASSOCIATES, INC.
WASTE ACID SERVICES, INC.



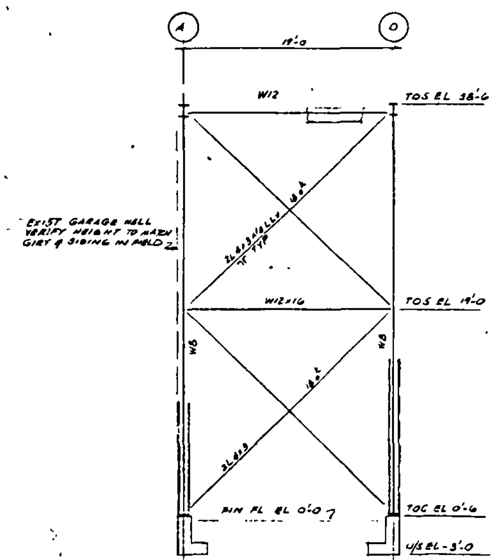
ELEVATION ON LINE (A)

3/16" = 1'-0



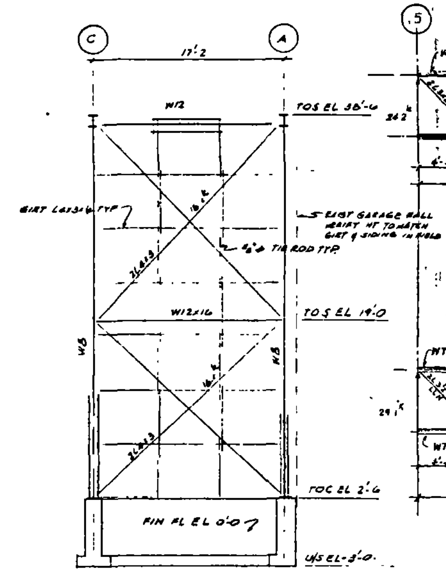
ELEVATION ON LINE (D)

3/16" = 1'-0



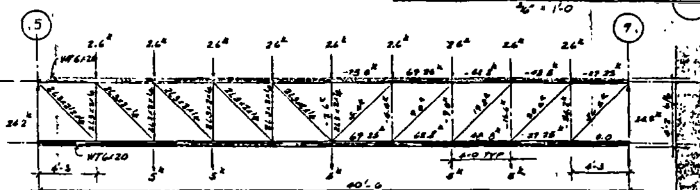
ELEVATION ON LINE (1)

3/16" = 1'-0

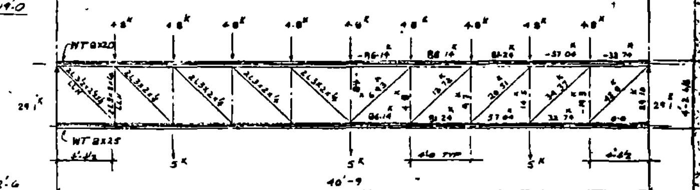


ELEVATION ON LINE (6)

3/16" = 1'-0



TRUSS T-1



TRUSS T-2

NOTES:

1. REFER SHT S-6 FOR GENERAL NOTES

NO.	REVISION	DATE
	ISSUED FOR CONSTRUCTION	11-26-75
	ISSUED FOR REVIEW	10-21-65

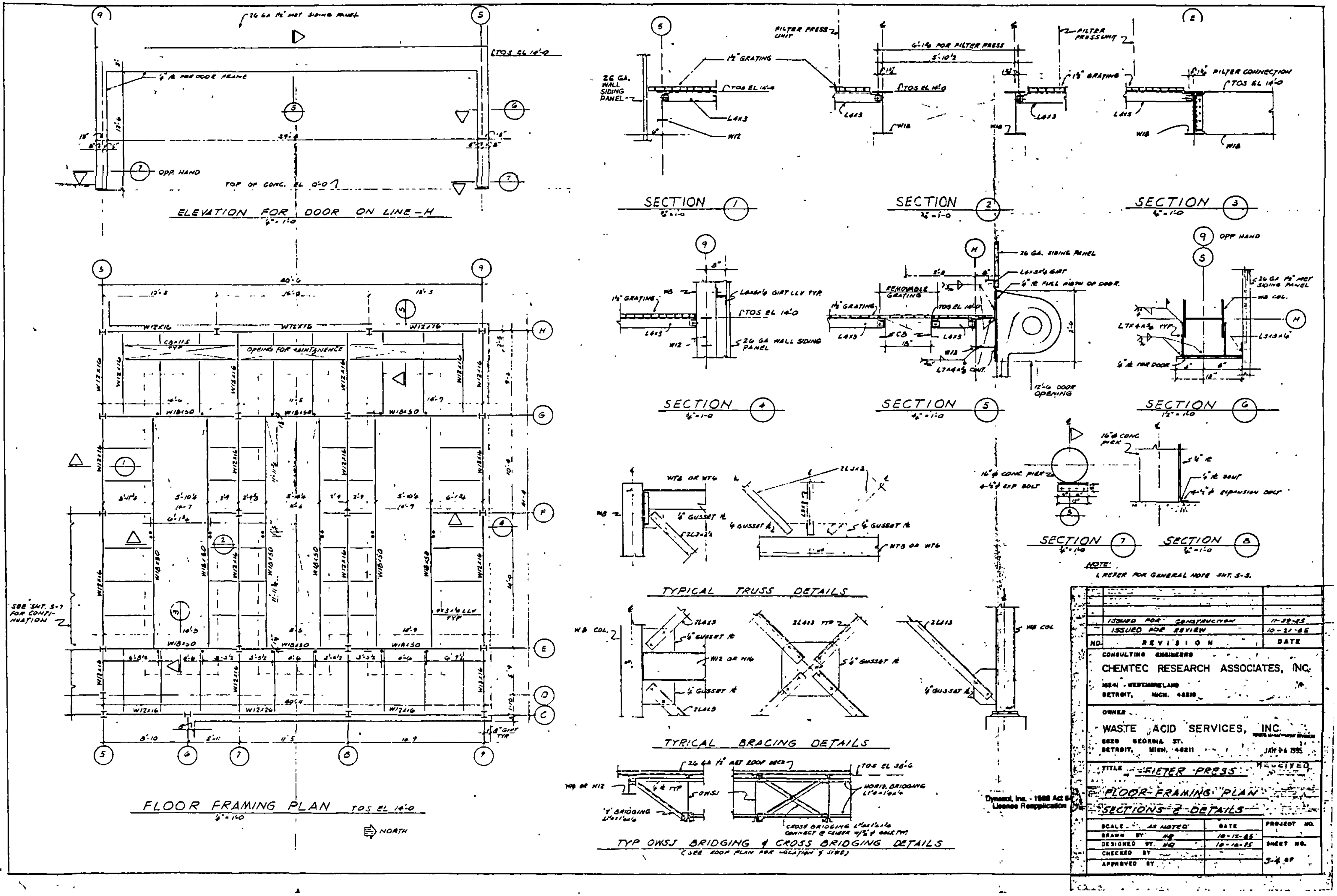
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
18241 WESTMORELAND
DETROIT, MICH. 48219

OWNER
WASTE ACID SERVICES, INC.
6520 GEORGIA ST.
DETROIT, MICH. 4821

RECEIVED

TITLE CORE FIBERGLASS TANKS
ELEVATIONS, SECTIONS & DETAILS

SCALE AS NOTED	DATE	PROJECT NO.
DRAWN BY HB	10-17-65	
DESIGNED BY HB SW	10-15-65	SHEET NO.
CHECKED BY HB SW	11-24-65	S-5 OF
APPROVED BY HB	11-24-65	



NO.	REVISION	DATE
	ISSUED FOR CONSTRUCTION	11-29-95
	ISSUED FOR REVIEW	10-21-95

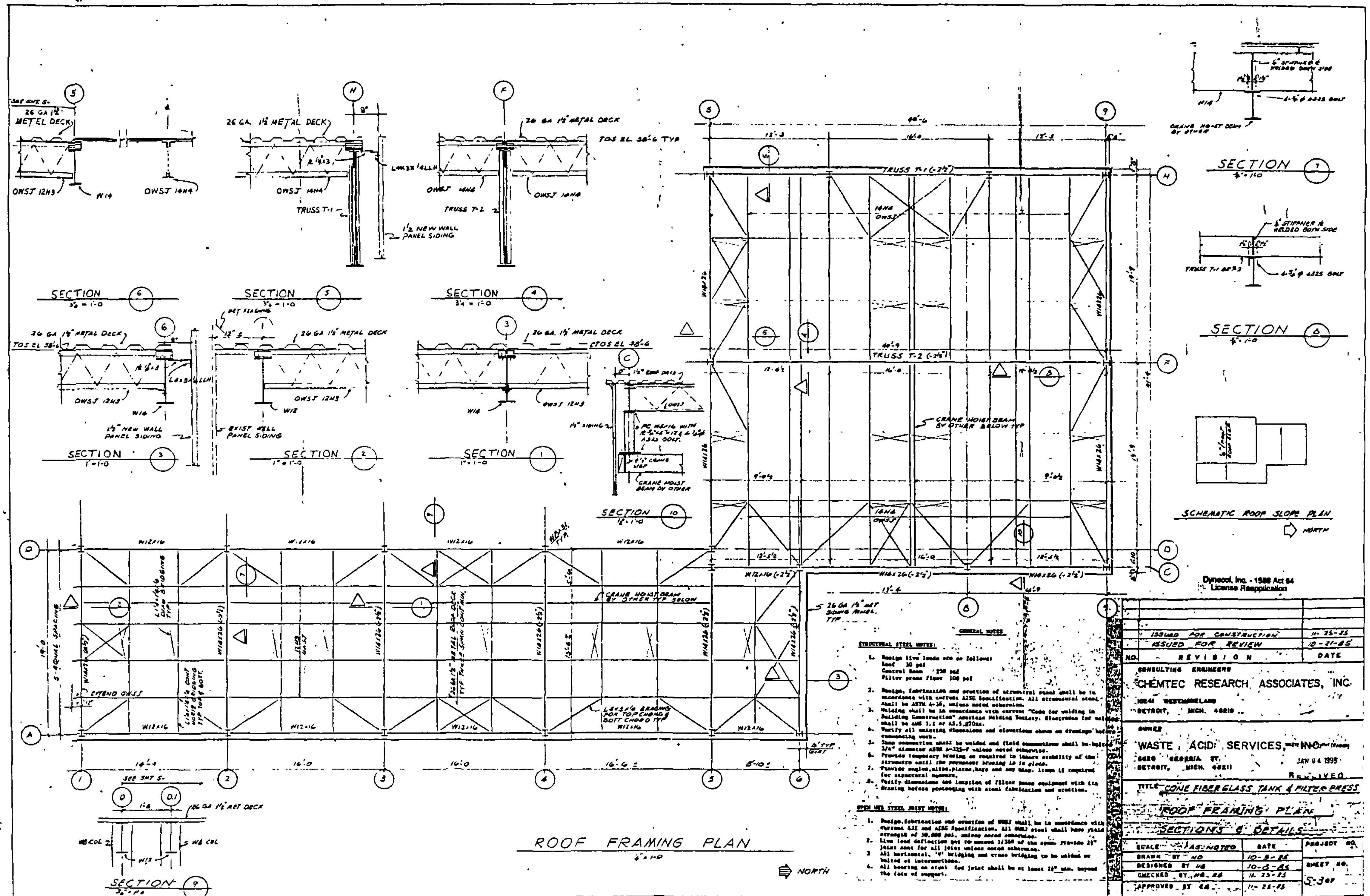
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
16241 - WESTMORELAND
DETROIT, MICH. 48219

OWNER
WASTE ACID SERVICES, INC.
6820 GEORGIA ST.
DETROIT, MICH. 48211

RECEIVED JAN 04 1995

TITLE
FILTER PRESS
FLOOR FRAMING PLAN
SECTIONS & DETAILS

		DATE	PROJECT NO.
SCALE	AS NOTED		
DRAWN BY	HQ	10-12-95	SHEET NO.
DESIGNED BY	HQ	10-10-95	
CHECKED BY			S-4 OF
APPROVED BY			



GENERAL NOTES

STRUCTURAL STEEL NOTES:

1. Design live loads are as follows:
   Roof 30 psf
   Control Room 250 psf
   Filter press floor 100 psf
2. Design, fabrication and erection of structural steel shall be in accordance with current AISC Specification. All structural steel shall be ASTM A-36, unless noted otherwise.
3. Welding shall be in accordance with current "Code for welding in Building Construction" American Welding Society. Electrodes for welding shall be AWS 5.1 or A5.5 E70xx.
4. Verify all existing dimensions and elevations shown on drawings before commencing work.
5. Shop connection shall be welded and field connections shall be bolted 3/4" diameter ASTM A-325-F unless noted otherwise.
6. Provide temporary bracing as required to insure stability of the structure until the permanent bracing is in place.
7. Provide angles, clips, plates, bars and any misc. items if required for structural members.
8. Verify dimensions and location of filter press equipment with its drawing before proceeding with steel fabrication and erection.

OPEN WEB STEEL JOIST NOTES:

1. Design, fabrication and erection of OWSJ shall be in accordance with current SJI and AISC Specification. All OWSJ steel shall have yield strength of 50,000 psi, unless noted otherwise.
2. Live load deflection not to exceed 1/360 of the span. Provide 2½" joist seat for all joist unless noted otherwise.
3. All horizontal, 'X' bridging and cross bridging to be welded or bolted at intersections.
4. All bearing on steel for joist shall be at least 2½" min. beyond the face of support.

Dynecol, Inc. - 1988 Act 64 License Reapplication

NO.	REVISION	DATE
	ISSUED FOR CONSTRUCTION	11-25-85
	ISSUED FOR REVIEW	10-21-85

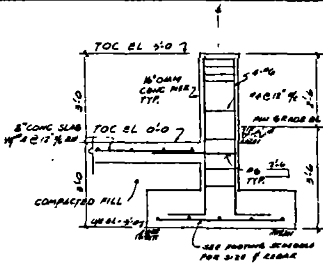
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
18641 WESTMORELAND
DETROIT, MICH. 48219

OWNER
WASTE ACID SERVICES, INC.
6020 GEORGIA ST.
DETROIT, MICH. 48211

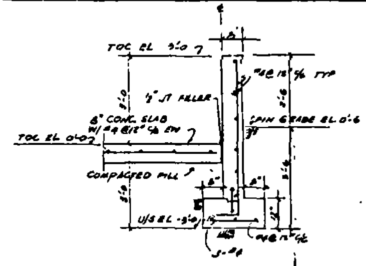
JAN 04 1995
RECEIVED

TITLE CONE FIBERGLASS TANK & FILTER PRESS
ROOF FRAMING PLAN
SECTIONS & DETAILS

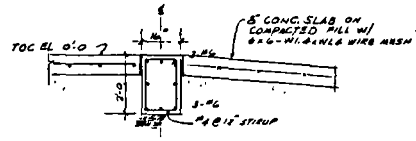
SCALE AS NOTED	DATE	PROJECT NO.
DRAWN BY NG	10-9-85	
DESIGNED BY NG	10-8-85	SHEET NO.
CHECKED BY NG EA	11-25-85	S-3 of
APPROVED BY EA	11-25-85	



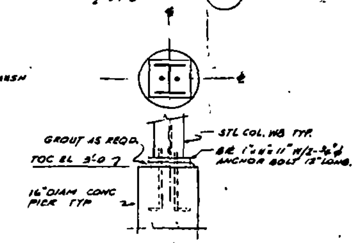
SECTION 1
½" = 1'-0



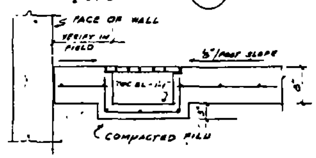
SECTION 2
½" = 1'-0



SECTION 3
½" = 1'-0



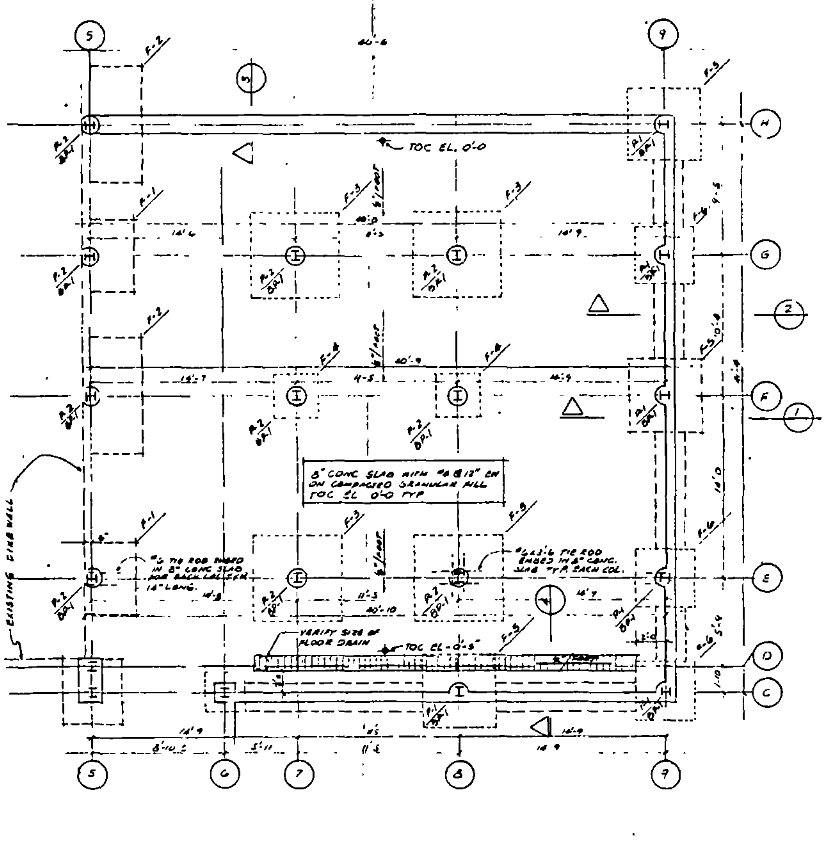
COL BASE PLATE DETAIL TYP



SECTION 4
1" = 1'-0

NOTE:

1. REFER SHEET S-1 FOR GENERAL NOTE, SECTION & DETAIL CONNECTION WITH THIS DRAWING.



FOUNDATION PLAN
¼" = 1'-0

NORTH

PIER & FOOTING SCHEDULE

	MARK	SIZE	REINFORCEMENT	REMARK
PIER	P-1	16" DIAM.	4-#6 w/#4@9" TIES	TOC EL. 3'-0
	P-2	16" DIAM.	4-#6 w/#3@9" TIES	TOC EL 0'-6
BASE PL	BP-1	BR 1" x 11" x 11"		2-¾" Ø x 18" AB.
FOOTING	F-1	3'-0 x 5'-0 x 1'-0	6-#6 NS, 10-#6 EW	U/S EL -3'-0
	F-2	3'-6 x 8'-0 x 1'-4	7-#6 NS, 14-#6 EW.	U/S EL -3'-0
	F-3	6'-0 x 6'-0 x 1'-4	7-#6 EW @ BOTT.	U/S EL -3'-0
	F-4	3'-0 x 3'-0 x 1'-0	4-#6 EW @ BOTT.	U/S EL -3'-0
	F-5	5'-0 x 5'-0 x 1'-4	6-#6 EW @ BOTT.	U/S EL -3'-0
	F-6	4'-0 x 4'-0 x 1'-0	5-#6 EW @ BOTT	U/S EL -3'-0

Dynecol, Inc. - 1986 Act 64
License Reapplication

NO.	REVISION	DATE
	ISSUED FOR CONSTRUCTION	11-11-85

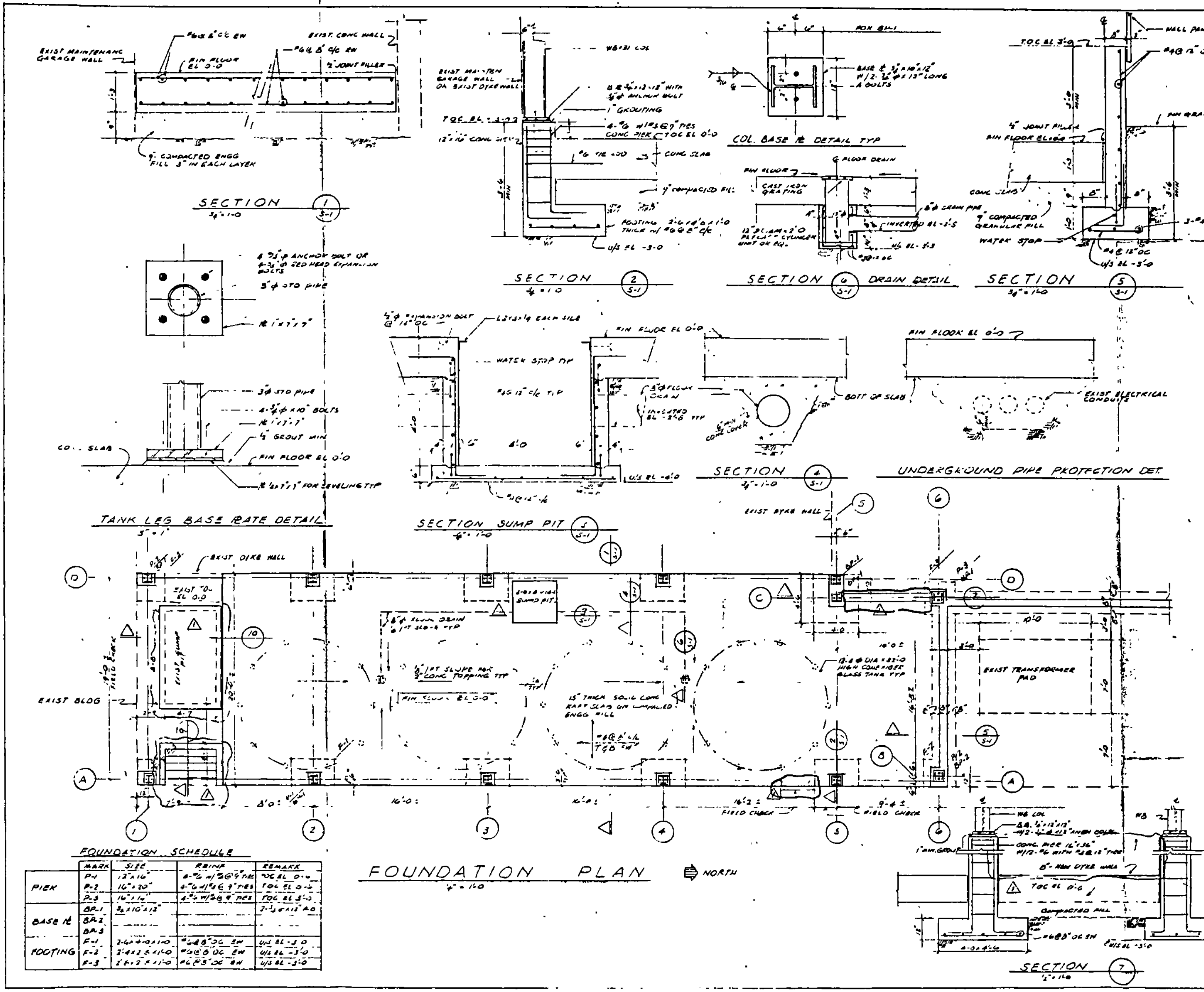
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
16841 WESTMORELAND
DETROIT, MICH. 48219

OWNER
WASTE ACID SERVICES, INC.
6520 GEORGIA ST
DETROIT, MICH. 48211

JAN 04 1995 RECEIVED

TITLE FILTER PRESS
FOUNDATION PLAN
SECTION & DETAIL

SCALE AS NOTED	DATE	PROJECT NO.
DRAWN BY HB	10-31-86	
DESIGNED BY HB	10-26-86	SHEET NO.
CHECKED BY HB. RB.	11-09-85	S-2 OF
APPROVED BY RB	11-11-86	



FOUNDATION SCHEDULE

	MARK	SIZE	REINF	REMARK
PIER	P-1	12"x16"	4-#6 w/#3@9" TIES	TOC EL 0-6
	P-2	16"x20"	4-#6 w/#3 @ 9" TIES	TOC EL 0-6
	P-3	16"x16"	4-#6 w/#3@ 9" TIES	TOC EL 5'-0
BASE ℞	BP-1	3/4x10"x12"		2-3/4φx15" AO
	BP-2			
	BP-3			
FOOTING	F-1	2-6x4-0x1-0	#6@8" OC EW	U/S EL -3 0
	F-2	3'-4x2.5x1'-0	#5@8" OC EW	U/S EL -3'-0
	F-3	2'6x2.5x1'-0	#6@8" OC EW	U/S EL -3'-0

GENERAL NOTE:

1. Cone fiberglass tanks raft foundation is designed for soil pressure of 1000 psf and column footing is designed for soil pressure of 1800 psf at the depth indicated Contact the engineer for correction action.
2. All concrete shall have a 28 day compressive strength of 3000 psi min.
3. Reinforcement steel yeild strength shall be grade of 60,000 psi unless noted otherwise
4. Contractor shall verify location of foundation layout with plant operator before casting footing and slab if plant is required to be shutdown.
5. The standards of ACI Building Code 318-83 and the standards of practice ACI 318-80 shall be followed for all detailing, fabrication and placement of all reinforcing steel and accesories
6. All fill under slab foundation and footings shall be compacted to 95% of maximum density (Modified Proctor Test) at optimum moisture content
7. Provide temporary bracing as required to insure the stability of existing and new structures.
8. Contractor shall coordinate with engineer during construction activities for any discripancy.

Dynecol, Inc. - 1986 Act 64
License Reapplication

NO.	REVISION	DATE
1	SUMP PIT & NEW DIKE WALL REFER SHT. A-1	3-31-87
	ISSUED FOR CONSTRUCTION	10-2-85
	ISSUED FOR REVIEW & APPROVAL	9-30-85

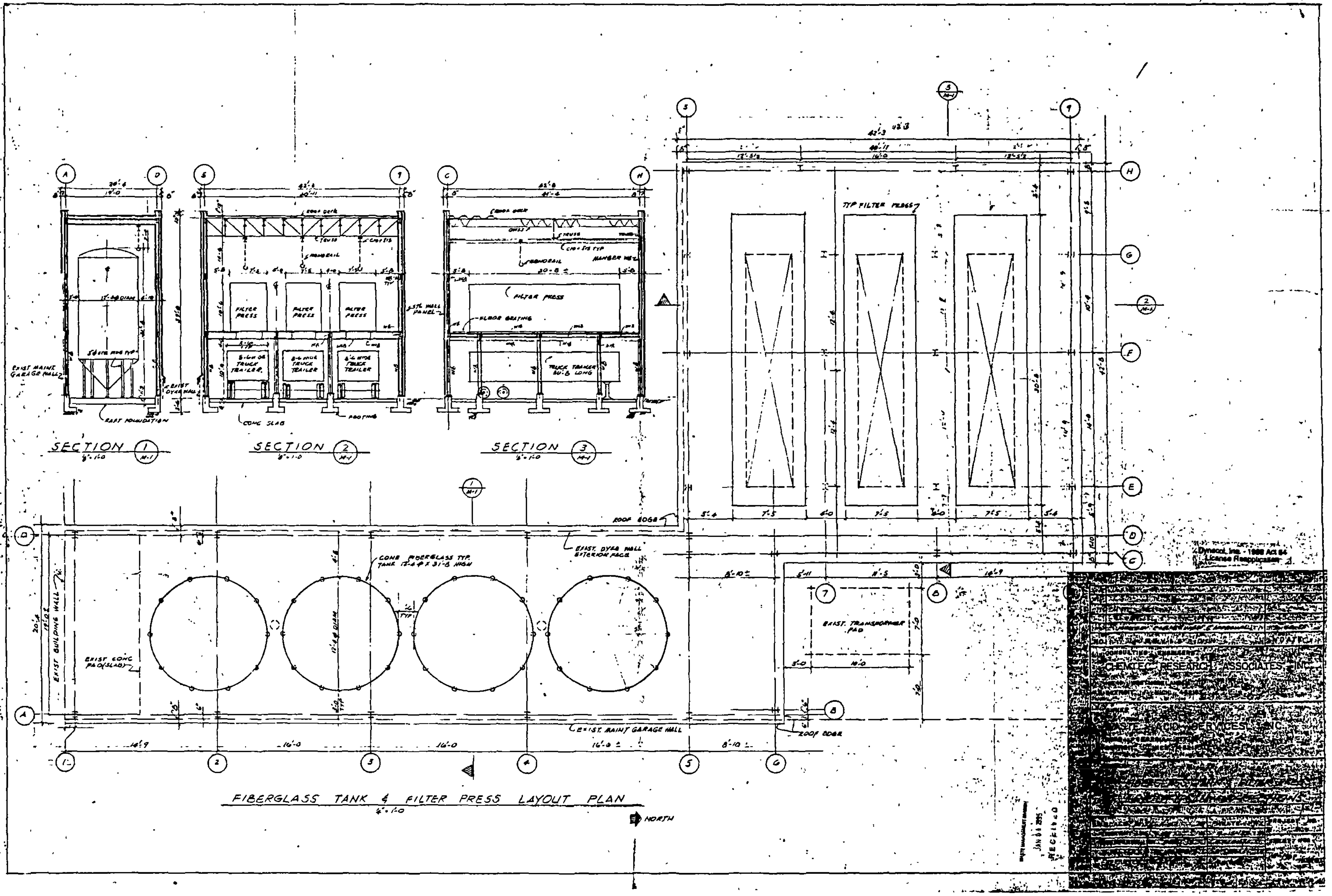
CONSULTING ENGINEERS
CHEMTEC RESEARCH ASSOCIATES, INC.
16641 WESTMORELAND
DETROIT, MICH. 48219

OWNER
DYNECOL, INC.
6520 GEORGIA ST.
DETROIT, MICH 48211

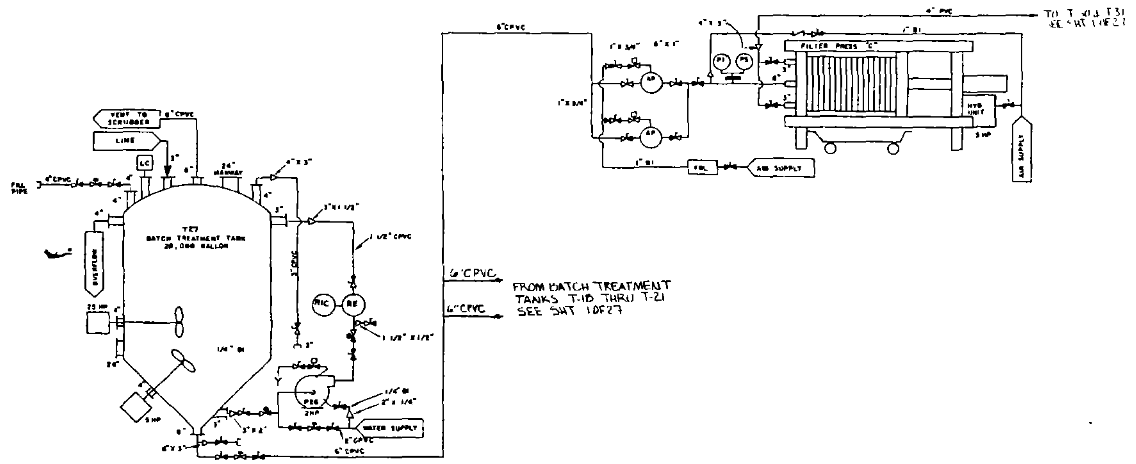
WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED

TITLE CONE FIBERGLASS TANKS
FOUNDATION PLAN
SECTIONS & DETAILS

SCALE AS NOTED	DATE	PROJECT NO.
DRAWN BY HB	9/30/85	
DESIGNED BY HB	9/30/85	SHEET NO.
CHECKED BY HB, RB	9/30/85	S-1 OF
APPROVED BY		



SECTION 1 M-1
SECTION 2 M-1
SECTION 3 M-1
FILTER PRESS
TRUCK TRAILER
FLOOR GRATING
MONORAIL
ROOF DECK
TRUSS
RAFT FOUNDATION
CONC SLAB
FOOTING
EXIST MAINT GARAGE WALL
EXIST DYER WALL
TYP FILTER PRESS
ROOF EDGE
EXIST. DYER WALL EXTERIOR FACE
CONE FIBERGLASS TYP. TANK 17'-4 Ø X 31'-8 HIGH
EXIST BUILDING WALL
EXIST CONC PAD(SLAB)
EXIST. TRANSFORMER PAD
EXIST. MAINT GARAGE WALL
FIBERGLASS TANK & FILTER PRESS LAYOUT PLAN
NORTH
Dynecol, Inc. - 1988 Act 64 License Reapplication
CHEMTEC RESEARCH ASSOCIATES, INC.



REVISED
DECEMBER 1994
EARTH TECH

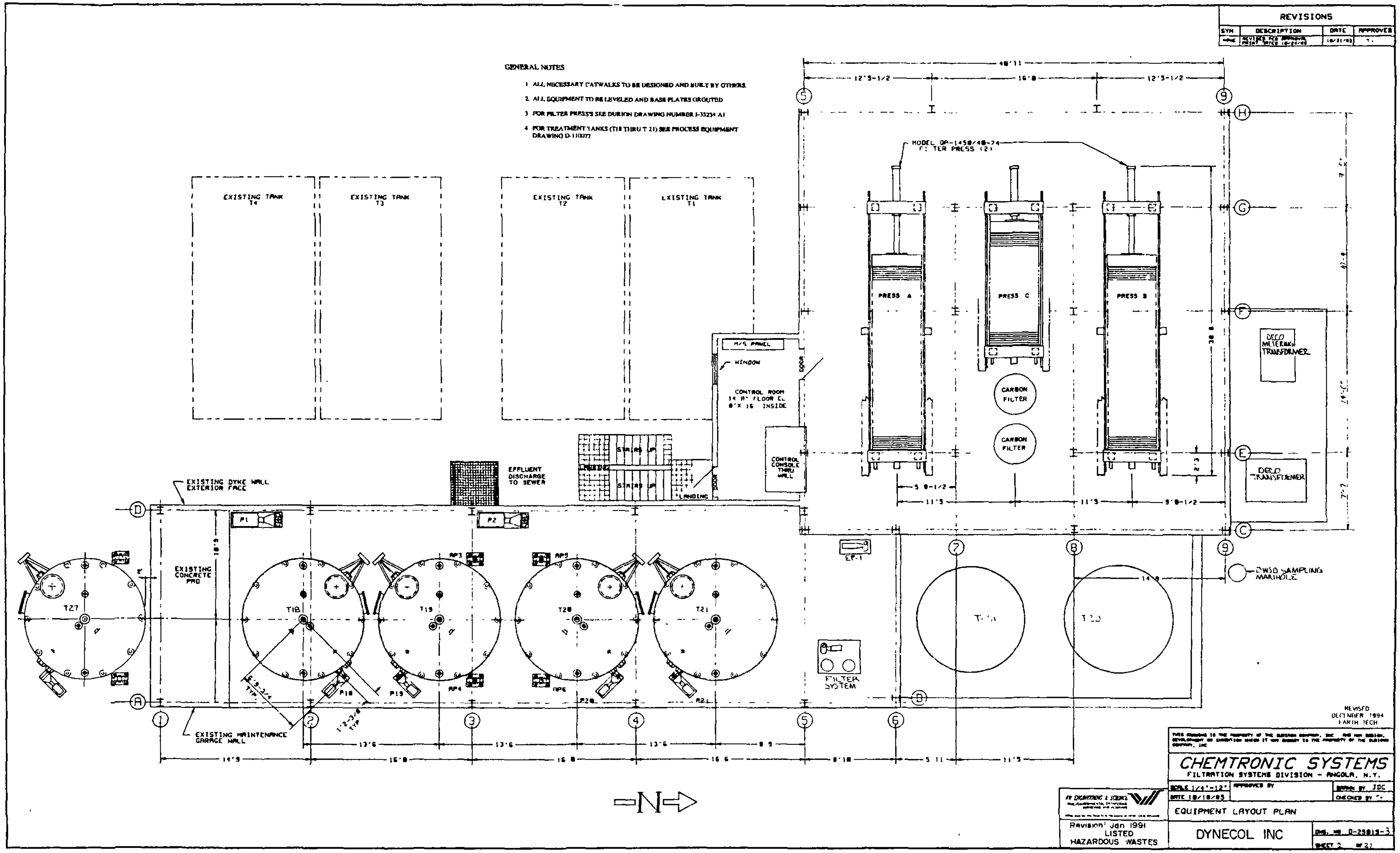
WASTE MANAGEMENT DIVISION
JAN 04 1995
RECEIVED

SCALE NONE		DRAWN BY NDL
DATE 1-10-91		

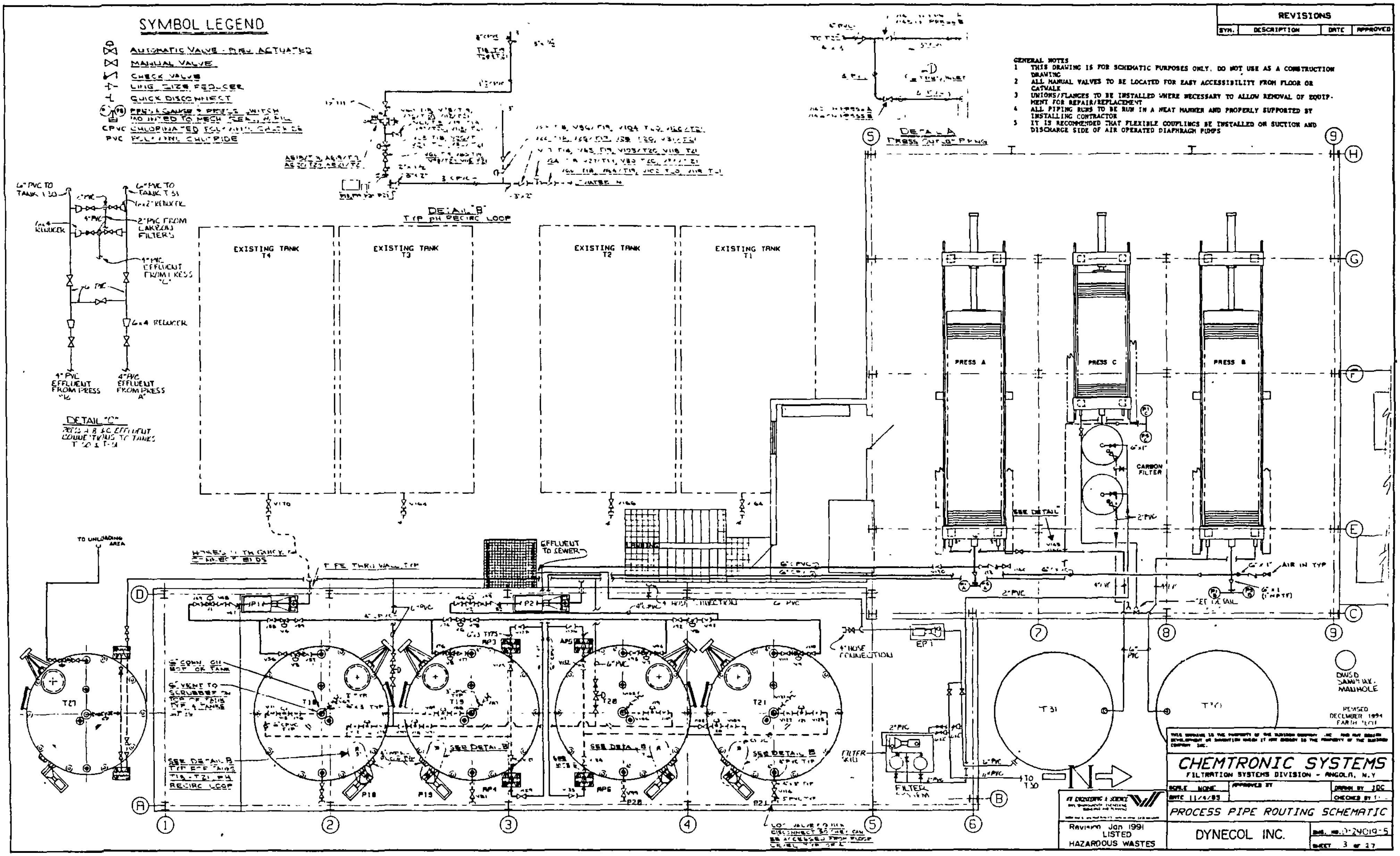
PROCESS FLOW DIAGRAM
LISTED WASTE TREATMENT SCHEMATIC

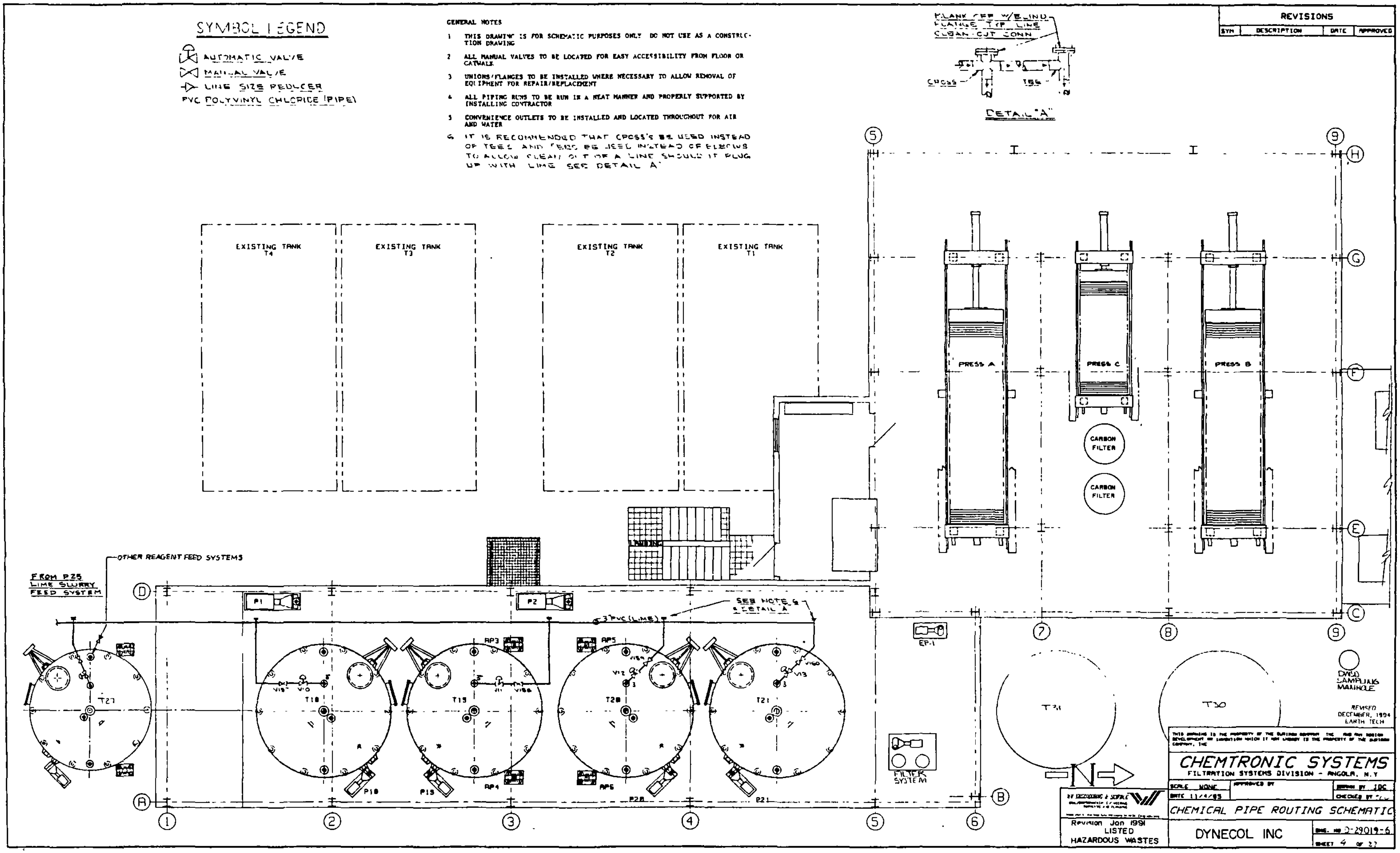
DYNECOL INC

SHEET 1A OF 27

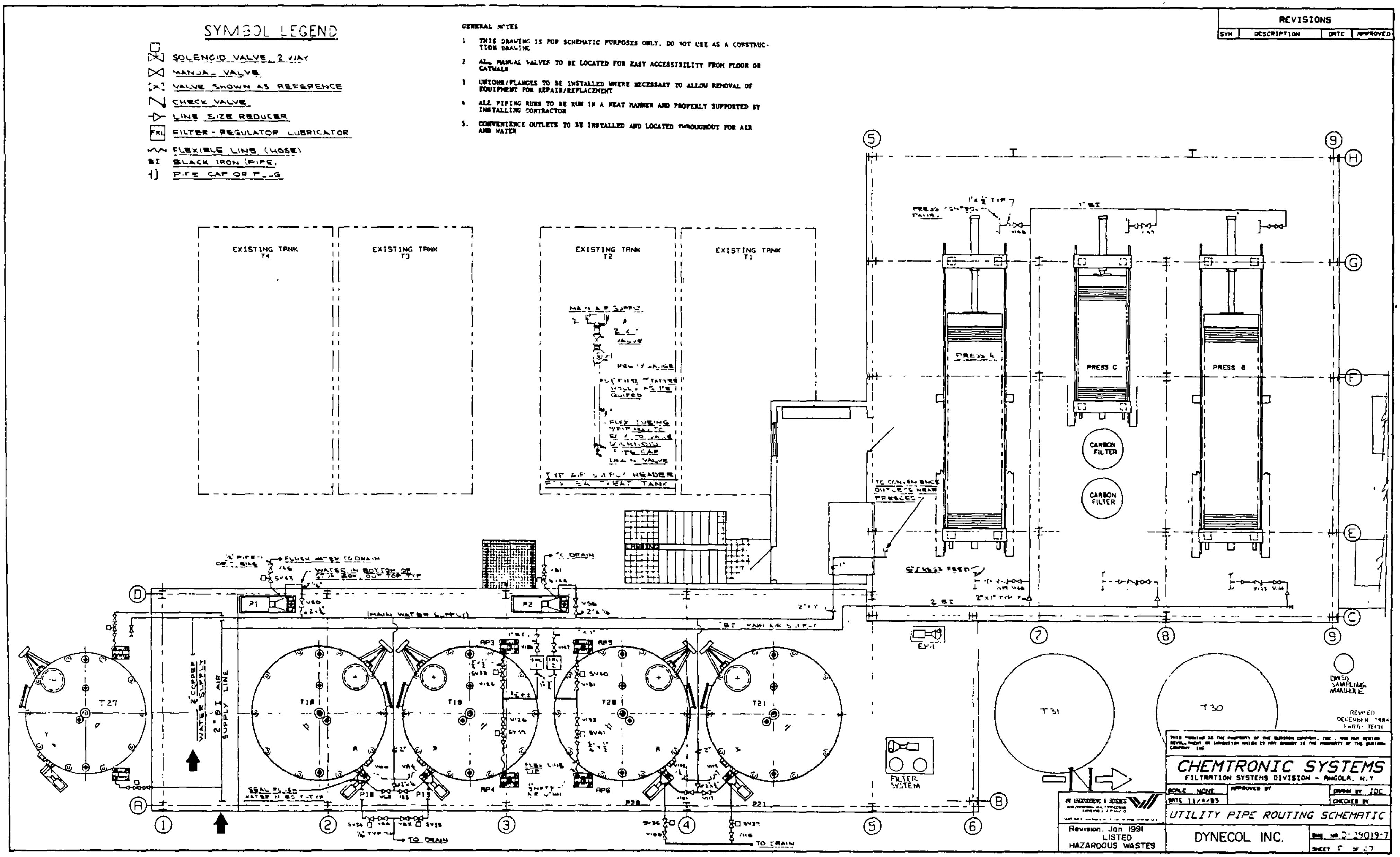


REVISIONS
SYM | DESCRIPTION | DATE | APPROVED
GENERAL NOTES
1 ALL NECESSARY CATWALKS TO BE DESIGNED AND BUILT BY OTHERS.
2 ALL EQUIPMENT TO BE LEVELED AND BASE PLATES GROUTED
3 FOR FILTER PRESS'S SEE DURION DRAWING NUMBER J-33234 A1
4 FOR TREATMENT TANKS (T18 THRU T 21) SEE PROCESS EQUIPMENT DRAWING D-110077
EXISTING TANK T4
EXISTING TANK T3
EXISTING TANK T2
EXISTING TANK T1
MODEL OP-1450/40-74 FILTER PRESS (2)
PRESS A
PRESS C
PRESS B
CARBON FILTER
CARBON FILTER
M/S PANEL
WINDOW
DOOR
CONTROL ROOM 14 8" FLOOR EL 8' X 16 INSIDE
CONTROL CONSOLE THRU WALL
STAIRS UP
LANDING
STAIRS UP
LANDING
EFFLUENT DISCHARGE TO SEWER
EXISTING DYKE WALL EXTERIOR FACE
EXISTING CONCRETE PAD
P1
P2
AP3
AP4
AP5
AP6
T27
T18
T19
T20
T21
T22
T23
P18
P19
P20
P21
EP-1
FILTER SYSTEM
DWSD SAMPLING MANHOLE
DECO METERING TRANSFORMER
DECO TRANSFORMER
EXISTING MAINTENANCE GARAGE WALL
48'11
12'5-1/2
16'0
12'5-1/2
5 9-1/2
11'5
11'5
9'9-1/2
14'9
16'0
16'0
16'6
13'6
13'6
13'6
8'9
8'10
5'11
11'5
14'0
38'8
REVISED DECEMBER 1994 EARTH TECH
CHEMTRONIC SYSTEMS
FILTRATION SYSTEMS DIVISION - ANGOLA, N.Y.
SCALE 1/4"=12"
DATE 10/10/85
DRAWN BY JDC
EQUIPMENT LAYOUT PLAN
Revision Jan 1991
LISTED
HAZARDOUS WASTES
DYNECOL INC
DWG. NO D-29819-3
SHEET 2 OF 27
N


SYMBOL LEGEND
AUTOMATIC VALVE - PNEU ACTUATED
MANUAL VALVE
CHECK VALVE
LINE SIZE REDUCER
QUICK DISCONNECT
CPVC CHLORINATED POLYVINYL CHLORIDE
PVC POLYVINYL CHLORIDE
REVISIONS
SYM. DESCRIPTION DATE APPROVED
GENERAL NOTES
1 THIS DRAWING IS FOR SCHEMATIC PURPOSES ONLY. DO NOT USE AS A CONSTRUCTION DRAWING
2 ALL MANUAL VALVES TO BE LOCATED FOR EASY ACCESSIBILITY FROM FLOOR OR CATWALK
3 UNIONS/FLANGES TO BE INSTALLED WHERE NECESSARY TO ALLOW REMOVAL OF EQUIPMENT FOR REPAIR/REPLACEMENT
4 ALL PIPING RUNS TO BE RUN IN A NEAT MANNER AND PROPERLY SUPPORTED BY INSTALLING CONTRACTOR
5 IT IS RECOMMENDED THAT FLEXIBLE COUPLINGS BE INSTALLED ON SUCTION AND DISCHARGE SIDE OF AIR OPERATED DIAPHRAGM PUMPS
DETAIL "A"
PRESS OUTLET PIPING
DETAIL "B"
TYP pH RECIRC LOOP
DETAIL "C"
EXISTING TANK T4
EXISTING TANK T3
EXISTING TANK T2
EXISTING TANK T1
PRESS A
PRESS C
PRESS B
CARBON FILTER
SEE DETAIL
EFFLUENT TO SEWER
TO UNLOADING AREA
AIR IN TYP
T27
T18
T19
T20
T21
T31
T30
P18
P19
P20
P21
EP1
FILTER SKID
FILTER SYSTEM
4" HOSE CONNECTION
SEE DETAIL B
DWSD SAMPLING MANHOLE
REVISED DECEMBER 1994 EARTH TECH
CHEMTRONIC SYSTEMS
FILTRATION SYSTEMS DIVISION - ANGOLA, N.Y
SCALE NONE
DATE 11/4/89
DRAWN BY JDC
PROCESS PIPE ROUTING SCHEMATIC
Revision Jan 1991
LISTED
HAZARDOUS WASTES
DYNECOL INC.
DWG. NO. D-29019-5
SHEET 3 OF 17



SYMBOL LEGEND
AUTOMATIC VALVE
MANUAL VALVE
LINE SIZE REDUCER
PVC POLYVINYL CHLORIDE (PIPE)
GENERAL NOTES
1 THIS DRAWING IS FOR SCHEMATIC PURPOSES ONLY DO NOT USE AS A CONSTRUCTION DRAWING
2 ALL MANUAL VALVES TO BE LOCATED FOR EASY ACCESSIBILITY FROM FLOOR OR CATWALK
3 UNIONS/FLANGES TO BE INSTALLED WHERE NECESSARY TO ALLOW REMOVAL OF EQUIPMENT FOR REPAIR/REPLACEMENT
4 ALL PIPING RUNS TO BE RUN IN A NEAT MANNER AND PROPERLY SUPPORTED BY INSTALLING CONTRACTOR
5 CONVENIENCE OUTLETS TO BE INSTALLED AND LOCATED THROUGHOUT FOR AIR AND WATER
6 IT IS RECOMMENDED THAT CROSS'S BE USED INSTEAD OF TEES AND TEES BE USED INSTEAD OF ELBOWS TO ALLOW CLEAN OUT OF A LINE SHOULD IT PLUG UP WITH LIME SEE DETAIL A
FLANGE TYP LINE
CLEAN OUT CONN
CROSS
TEE
DETAIL "A"
REVISIONS
SYM
DESCRIPTION
DATE
APPROVED
EXISTING TANK T4
EXISTING TANK T3
EXISTING TANK T2
EXISTING TANK T1
PRESS A
PRESS C
PRESS B
CARBON FILTER
CARBON FILTER
OTHER REAGENT FEED SYSTEMS
FROM P25 LIME SLURRY FEED SYSTEM
P1
P2
3" PVC (LIME)
SEE NOTE 6 & DETAIL A
EP-1
T27
T18
T19
T20
T21
T31
T30
P18
P19
P20
P21
RP3
RP4
RP5
RP6
FILTER SYSTEM
DWSD SAMPLING MANHOLE
REVISED DECEMBER, 1994 EARTH TECH
N
CHEMTRONIC SYSTEMS
FILTRATION SYSTEMS DIVISION - ANGOLA, N.Y
SCALE NONE
DATE 11/4/85
APPROVED BY
DRAWN BY IDC
CHECKED BY
CHEMICAL PIPE ROUTING SCHEMATIC
Revision Jan 1991
LISTED
HAZARDOUS WASTES
DYNECOL INC
DWG. NO D-29019-6
SHEET 4 OF 27


SYMBOL LEGEND
SOLENOID VALVE, 2 WAY
MANUAL VALVE
VALVE SHOWN AS REFERENCE
CHECK VALVE
LINE SIZE REDUCER
FRL FILTER - REGULATOR LUBRICATOR
FLEXIBLE LINE (HOSE)
BI BLACK IRON PIPE
PIPE CAP OR PLUG
GENERAL NOTES
1 THIS DRAWING IS FOR SCHEMATIC PURPOSES ONLY. DO NOT USE AS A CONSTRUCTION DRAWING
2 ALL MANUAL VALVES TO BE LOCATED FOR EASY ACCESSIBILITY FROM FLOOR OR CATWALK
3 UNIONS/FLANGES TO BE INSTALLED WHERE NECESSARY TO ALLOW REMOVAL OF EQUIPMENT FOR REPAIR/REPLACEMENT
4 ALL PIPING RUNS TO BE RUN IN A NEAT MANNER AND PROPERLY SUPPORTED BY INSTALLING CONTRACTOR
5. CONVENIENCE OUTLETS TO BE INSTALLED AND LOCATED THROUGHOUT FOR AIR AND WATER
REVISIONS
SYM DESCRIPTION DATE APPROVED
EXISTING TANK T4
EXISTING TANK T3
EXISTING TANK T2
EXISTING TANK T1
PRESS C
PRESS B
CARBON FILTER
CARBON FILTER
T27
T18
T19
T20
T21
T31
T30
P1
P2
(MAIN WATER SUPPLY)
2" COPPER WATER SUPPLY
2" B.I. AIR SUPPLY LINE
FLUSH WATER TO DRAIN
TO DRAIN
TO DRAIN
TO DRAIN
FILTER SYSTEM
SAMPLING MANHOLE
REVISED DECEMBER 1994
CHEMTRONIC SYSTEMS
FILTRATION SYSTEMS DIVISION - ANGOLA, N.Y
SCALE NONE
DATE 11/4/85
APPROVED BY
DRAWN BY JDC
CHECKED BY
UTILITY PIPE ROUTING SCHEMATIC
Revision. Jan 1991
LISTED
HAZARDOUS WASTES
DYNECOL INC.
DWG. NO. D-29019-7

Please print or type in the unshaded areas only (fill-in areas are spaced for elite type, i.e., 12 characters/inch)

Required under authority of Act 64, PA 1979, as amended and Act 136, PA

FORM 1 GENERAL

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F MID074259565

APPLICATION FOR HAZARDOUS WASTE TREATMENT, STORAGE OR DISPOSAL FACILITY CONSTRUCTION PERMIT OR OPERATING LICENSE

II. CONSTRUCTION PERMIT OR OPERATING LICENSE APPLICATION (check one)

A. CONSTRUCTION PERMIT APPLICATION

B. OPERATING LICENSE APPLICATION

If this is an operating license application, mark an X in the appropriate box:

1. ☐ FIRST APPLICATION (NEW FACILITY)
2. ☐ FIRST APPLICATION (EXISTING FACILITY)
3. ☒ RENEWAL APPLICATION
4. ☐ APPLICATION FOR LICENSE REVISION
5. ☐ RESEARCH, DEVELOPMENT & DEMONSTRATION LICENSE APPLICATION

III. NAME OF FACILITY

1 SKIP DYNECOL INC

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 BIERMANN, FRANK PRESIDENT	313 571 7141

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 6520 GEORGIA ST

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 DETROIT	MI	48211

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 6520 GEORGIA STREET

B. COUNTY NAME

WAYNE

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
6 DETROIT	MI	48211	

VIB. TITLEHOLDER OF LAND

A. NAME

8 PVS CHEMICALS, INC.

E. STREET OR P.O. BOX

0900 HARPER AVE

F. CITY OR TOWN	G. STATE	H. ZIP CODE	D. PHONE (area code & no.)
8 DETROIT	MI	48213	A 313 921 12C

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST		B. SECOND	
7 4953	(specify) REFUSE SYSTEMS	7 8999	(specify) SERVICES
C. THIRD		**D. FOURTH**	
7	(specify)	7	(specify)

VIII. OPERATOR INFORMATION

A. NAME

3 DYNECOL INC.

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☒ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify)

P (specify)

D. PHONE (area code & no.)

A

E. STREET OR P.O. BOX

6520 GEORGIA STREET

F. CITY OR TOWN	G. STATE	H. ZIP CODE
3 DETROIT	MI	48211

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

OWNERSHIP

A. NAME

3 PVS CHEMICALS, INC.

E. STREET OR P.O. BOX

10900 HARPER AVENUE

F. CITY OR TOWN	G. STATE	H. ZIP CODE	PHONE (area code & no.)
DETROIT	MI	48213	A 313 921 120[illegible]

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)	
9 N N/A	9 P N/A	
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**	
9 U N/A	9 AIR PERMIT	(specify) See Appendix A.1
C. RCRA (Hazardous Wastes)	**E. OTHER (specify)**	
9 R	9 SEWER PERMIT	(specify) See Appendix A.1

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements. Refer to Drawing B.4 in Section B of Applicat

XII. NATURE OF BUSINESS (provide a brief description)

Treatment/Storage/Transportation of Hazardous and Non-Hazardous Wastes. Refer to Section B of Permit Application for detailed information.

XIII. FEE INFORMATION (check A or B)

A. ☐ CONSTRUCTION PERMIT FEE

1. ☐ COST OF REVIEW

2. ☐ FIXED FEE (complete the following) — FEE

a. Check type of facility:

☐ Land Disposal ($9,000)	$
☐ Incineration or other treatment ($7,200)	$
☐ Storage ($500)	$

b. Site size ______ acres (see fee schedule) $

c. Projected waste volume (see fee schedule)

______ Gallons/day $

OR ______ Cubic yards/day $

d. Hydrogeological characteristics for land disposal

- ☐ Natural Clay
- ☐ Sand
- ☐ Compacted Clay
- ☐ Artificial Liner $

e. For treatment or storage facilies:
Is there surface water on the site?

- ☐ No
- ☐ Yes ($75) $

TOTAL FIXED FEE COST: $

B. ☒ OPERATING LICENSE FEE $ 500.00

XIV. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
FRANK BIERMANN, PRESIDENT	Frank Biermann	1/3/95

XV. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
FRANK BIERMANN, PRESIDENT	Frank Biermann	1/3/95

XVI. TITLEHOLDER OF LAND CERTIFICATION

certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all achments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the pplication; I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
FRANK BIERMANN, PRESIDENT	Frank Biermann	1/3/95

FORM 8 U RCRA

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

I. EPA I.D. NUMBER

F

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your fac... revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your fac... EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate data)

☐ 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

☐ 2. NEW FACILITY (Complete item below)

	YR.	MO.	DAY	
81	76	09	15	FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR EXPECTED TO BE...

B. REVISED APPLICATION

☐ 1. ☐ 2.

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	
LITERS	L	TONS PER HOUR	D	HECTARE-METER	
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and ... other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	S01	41,000	G		7				
2	S02	20,000	G		8				
	T01	144,000	G		9				
4					10				

CONTINUE ON RE...

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non–listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

Continued from page 2
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY		
W M I D 0 7 4 2 5 9 5 6 5 / 1	W	DUP	2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1		10,000,000	P	S 0 1	See Table A.1
2		276,000,000	P	S 0 2 T 0 1	See Table A.2.1
3		180,000,000	P	S 0 2 T 0 1	See Table A.2.2
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON RE

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. (enter from page 1)

F M I D 0 7 4 2 5 9 5 6 5 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground— level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
42 23 035	083 01 056

VIII. GENERAL INFORMATION

Attach each of the following as separate attachments to the application:

1. General facility description
2. Chemical & physical analysis
3. Waste analysis plan
4. Security procedures
5. Inspection schedule
6. Contingency plan
7. Preparedness prevention
8. Traffic information
9. Location information
10. Training program
11. Closure/post-closure
12. Cost estimates
13. Liability mechanism
14. Financial assurance
15. Topographic map

IX. SUPPLEMENTAL INFORMATION

Attach for all applications:

1. Hydrogeological report
2. Environmental assessment
3. Environmental monitoring program
4. Engineering plans

Attach for operating license applications or

1. For new facilities, construction certific...
2. Capability certification/compliance sched...
3. Proof of other permits or licenses
4. Restrictive covenant (landfills only)

X. FACILITY SPECIFIC INFORMATION

Attach the required technical information for each of the following:

1. Containers
2. Tanks
3. Incineration or thermal treatment
4. Treatment
5. Surface impoundments
6. Waste piles
7. Landfills
8. Land treatment

CONT...

Continued from page 4

V. FACILITY DRAWING (see page 4)

Refer to Section B of Permit Application for facility drawing.

ACT 64 OPERATING LICENSE
REAPPLICATION FOR DYNECOL, INC.

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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

January 9, 1998

To: Dan Dailey, WMD, Hazardous Waste Permits Section, Lansing

From: Jeanette M. Noechel, WMD, Southeastern Michigan, Detroit Office

Subject: Dynecol, Inc.
6520 Georgia Street
Detroit, MI 48211
MID 074 259 565

Dynecol has, historically, either been in compliance or has responded in a timely fashion to inspections to return to compliance.

Jeanette M Noechel
1/8/97

Dynecol, Inc.
6520 Georgia Street
Detroit, Michigan 48211
MID 074259565

RCRA/ACT 64 COMPLIANCE CHRONOLOGY

05/25/90	Michigan Department of Natural Resources (MDNR) conducted a Treatment/Storage/Disposal Facility (TSDF) inspection.
06/01/90	Law Enforcement Division (LED) of the MDNR conducted an inspection of a Dynecol, Inc. (DI) waste hauling vehicle at a weigh station. No violations were noted.
06/11/90	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
06/18/90	MDNR issued a letter of warning (LOW) for the 05/25/90 TSDF inspection. The following violation was noted: DI did not prevent the unknowing entry for unauthorized persons or livestock onto the facility.
06/18/90	MDNR issued a return to compliance (RTC) letter for the 06/18/90 LOW.
06/22/90	DI responded to the 06/18/90 LOW.
06/26/90	LED of the MDNR conducted an inspection of DI waste hauling vehicle at a weigh station. No violations were noted.
08/29/90	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. One violation was noted as follows: Manifest forms were not available.
09/07/90	DI responded and corrected the vehicle violation on 08/29/90.
09/07/90	MDNR conducted TSDF inspection.
09/19/90	MDNR issued a LOW for the 09/07/90 TSDF inspection. The following violations were noted: Manifest violations, observed crack in floor by tank 8, missing documentation of local emergency organizations' copies of the contingency plan and drums of product acid were being stored outside.

10/11/90	DI responded to the 09/19/90 LOW.
10/30/90	MDNR issued a RTC for the 09/19/90 LOW.
11/13/90	MDNR conducted a TSDF inspection.
11/14/90	MDNR issued a LOW for the 11/13/90 TSDF inspection. The following violation was noted: There were still cracks in the floor by tank 8.
11/27/90	DI responded to the 11/14/90 LOW.
11/29/90	MDNR issued a RTC letter for the 11/14/90 LOW.
11/29/90	MDNR conducted a financial review inspection and issued an IC letter.
01/08/91	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
03/12/91	MDNR conducted a TSDF inspection.
03/12/91	MDNR issued an IC letter for the 03/12/91 TSDF inspection.
03/31/91	MDNR conducted a TSDF inspection.
06/04/91	MDNR issued an IC letter for the 03/31/91 inspection.
07/10/91	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
07/10/91	Incident reported. Nitrogen Dioxide release on 07/06/91.
07/10/91	DI responded to 07/10/91 incident report.
07/23/91	Incident reported. Odor similar to natural gas reported on 07/18-19/91.
08/29/91	MDNR conducted a TSDF inspection.
08/31/91	MDNR issued an IC letter for the 08/29/91 TSDF inspection.
09/05/91	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
11/19/91	MDNR conducted a TSDF inspection.
11/20/91	MDNR issued an IC letter for the11/19/91 TSDF inspection.

12/08/91	DI responded to the 11/20/91 IC letter.
02/11/92	MDNR conducted a TSDF inspection.
02/13/92	MDNR issued a LOW for the 02/11/92 TSDF inspection. The following violations were noted: Failure to repair cracks in the loading/unloading area and failure to maintain an annual certification of a program to reduce the volume and toxicity of hazardous waste.
02/24/92	DI responded to the 02/13/92 LOW.
02/28/92	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
03/24/92	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. The following violations were noted and corrected by the facility: Proper lettering was not displayed, manifests were not available and truck exterior was not kept clean.
03/30/92	MDNR issued a second LOW for the 02/11/92 TSDF inspection. The following violaitons still remained: Loading pad needed repair and failure to submit the annual certification.
04/02/92	DI responded to the 03/24/92 vehicle violation.
04/13/92	DI responded to the 03/30/92 LOW.
04/30/92	DI responded a second time to the 03/30/92 LOW.
06/05/92	MDNR issued a RTC for the 02/13/92 LOW.
06/16/92	MDNR conducted a TSDF inspection.
07/01/92	MDNR issued a LOW for the 06/16/92 TSDF inspection. The following violations were noted: Dates were missing on waste containers, failure to maintain records of annual updates to the personnel training and failure to maintain an inspection log for storage area.
07/06/92	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
07/31/92	DI responded to the 07/01/92 LOW.
08/07/92	MDNR issued a RTC letter for the 07/01/92 LOW.

08/12/92	United States Environmental Protection Agency (USEPA) conducted a TSDF inspection.
09/17/92	MDNR conducted a TSDF inspection.
09/21/92	MDNR issued a LOW for the 09/17/92 TSDF inspection. The following violation was noted: Failure to specify the wastewater or nonwastewater category on the generator land disposal restriction notification.
10/08/92	DI responded to the 09/21/92 LOW.
10/02/92	USEPA issued a notice of violation (NOV) for the 08/12/92 TSDF inspection. The following violation was noted: A shipment of hazardous waste was received, and MDNR did not receive proper notification.
10/20/92	MDNR issued a second LOW for the 09/17/92 TSDF inspection.
10/26/92	DI responded to the 10/20/92 LOW.
10/27/92	DI responded to the 10/02/92 NOV from the USEPA.
11/10/92	MDNR issued a second LOW for the 09/17/92 TSDF inspection.
11/19/92	MDNR conducted a TSDF inspection.
11/30/92	MDNR issued an IC letter for the 11/19/92 TSDF inspection.
12/07/92	MDNR issued a RTC letter for the 11/10/92 LOW.
12/14/92	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
01/21/93	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
01/25/93	USEPA issued a RTC for the 10/02/92 NOV.
03/19/93	MDNR conducted a TSDF inspection.
03/26/93	MDNR issued an IC letter for the 03/19/93 TSDF inspection.
06/23/93	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.

06/28/93	MDNR conducted a TSDF inspection.
07/01/93	MDNR issued a LOW for the 06/28/93 TSDF inspection. The following violations were noted: Aisle spacing violation, failure to mark containers with the words "Hazardous Waste", failure to mark nine drums with the dates entering storage, one drum was not placed completely on the pallet and failure to submit monthly reports to the director.
07/22/93	DI responded to the 07/01/93 LOW.
07/29/93	MDNR conducted a follow-up TSDF inspection to the 06/28/93 TSDF inspection.
07/30/93	DI responded a second time to the 07/01/93 LOW.
08/06/93	MDNR issued an IC letter for the 07/29/93 TSDF inspection.
08/09/93	DI responded a third time to the 07/01/93 LOW.
08/11/93	MDNR issued a RTC for all but the components of the tank systems requirements violation stated on the 07/01/93 LOW.
08/20/93	MDNR conducted a financial review inspection and issued an IC letter.
08/26/93	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
10/27/93	MDNR issued a RTC for the 08/11/93 outstanding violation.
12/01/93	MDNR conducted a TSDF inspection.
12/10/93	MDNR issued an IC letter for the 12/01/93 TSDF inspection.
03/22/94	MDNR conducted a TSDF inspection.
04/06/94	MDNR issued an IC letter for the 03/22/94 TSDF inspection.
06/27/94	MDNR conducted a TSDF inspection.
06/30/94	MDNR issued an IC letter for the 06/27/94 TSDF inspection.
09/27/94	MDNR conducted a financial review inspection and issued an IC letter.
09/28/94	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.

12/28/94	MDNR conducted a transporter inspection. No violations were noted.
03/22/95	MDNR conducted a TSDF inspection.
04/05/95	MDNR issued an IC letter for the 03/22/95 TSDF inspection.
04/13/95	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
04/18/95	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
05/12/95	MDNR conducted a TSDF inspection.
05/16/95	MDNR issued an IC letter for the 05/12/95 TSDF inspection.
05/25/95	USEPA conducted a manifest review inspection.
06/27/95	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
08/07/95	MDNR conducted a TSDF inspection.
08/23/95	MDNR issued an IC letter for the 08/07/95 TSDF inspection.
10/16/95	USEPA issued a NOV for the 05/25/95 manifest review inspection. The following violation was noted: International shipments violations.
10/27/95	MDNR conducted a TSDF inspection.
10/31/95	DI responded to the 10/16/95 NOV.
11/15/95	MDNR issued an IC letter for the 10/27/95 TSDF inspection.
12/12/95	LED of the MDNR conducted an inspection of a DI waste hauling vehicle at a weigh station. No violations were noted.
06/24/96	MDEQ conducted a TSDF inspection.
06/26/96	MDEQ issued an IC letter for the 06/24/96 TSDF inspection.

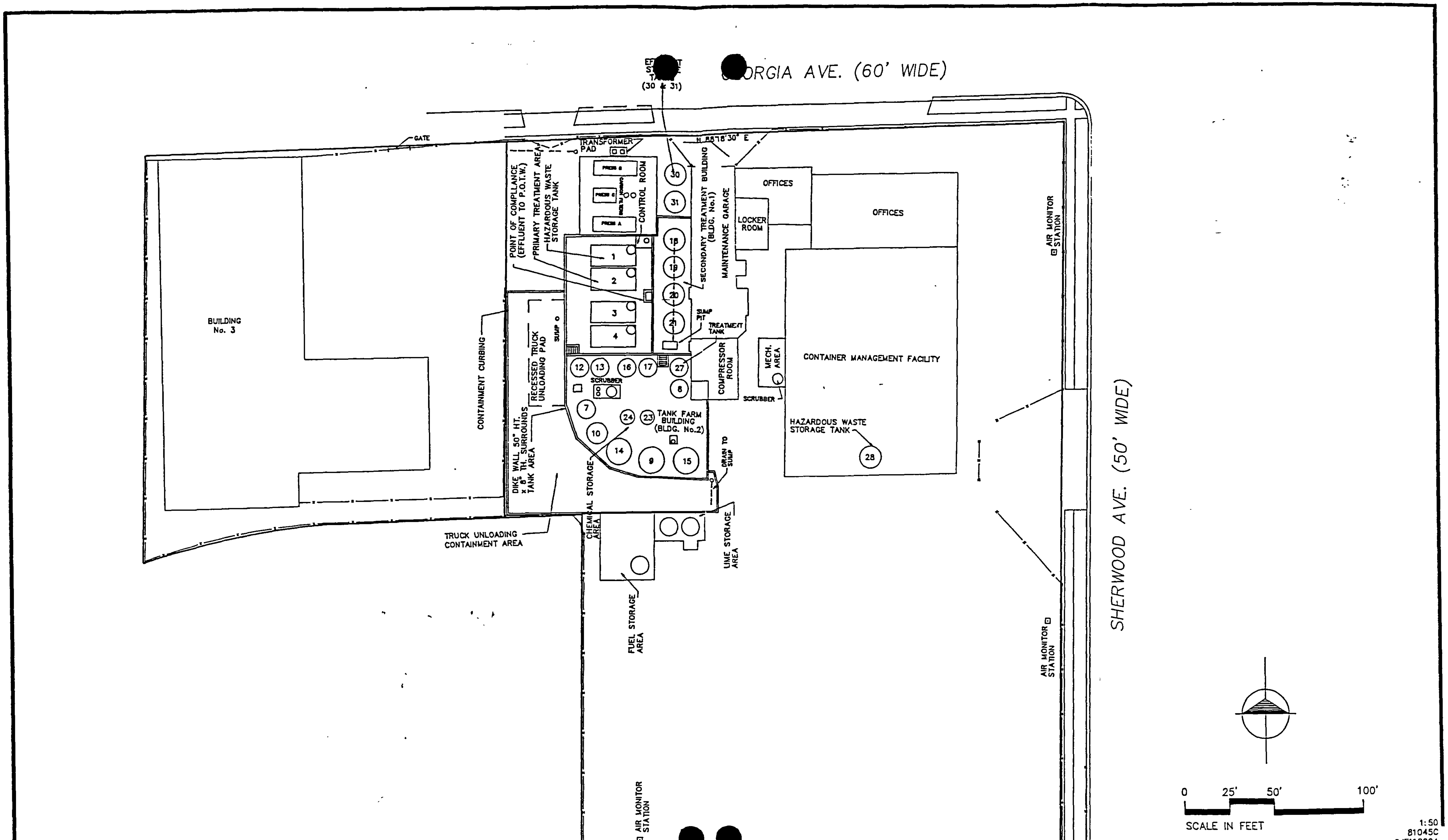


FIGURE B.3, G.1, F.1

SITE PLAN

DYNECOL, INC.
DETROIT, MICHIGAN

ATTACHMENT 3: Acceptable Waste Codes

TABLE A.1
WASTE CODES ACCEPTED AT THE CONTAINER MANAGEMENT FACILITY

1. **CHARACTERISTICALLY HAZARDOUS WASTES**
D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D012, D013, D014, D015, D016, D017, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043.

2. **HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES**
F001, F002, F003, F004, F005, F006, F007, F008, F009, F010, F011, F012, F019, F024, F025, F032, F034, F035, F037, F038, F039.

3. **HAZARDOUS WASTES FROM SPECIFIC SOURCES**
K001, K002, K003, K004, K005, K006, K007, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047 K048, K049, K050, K051, K052, K060, K061, K062, K064, K065, K066, K069, K071, K073, K083, K084, K085, K086, K087, K088, K090, K091, K093, K094, K095, K096, K097, K098, K099, K100, K101, K102, K103, K104, K105, K106, K107, K108, K109, K110, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K131, K132, K136, K141, K142, K143, K144, K145, K147, K148, K149, K150, K151.

4. **DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF**
P001, P002, P003, P004, P005, P006, P007, P008, P009, P010, P011, P012, P013, P014, P015, P016, P017, P018, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P033, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P056, P057, P058, P059, P060, P062, P063, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P076, P077, P078, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P106, P108, P109, P110, P111, P112, P113, P114, P115, P116, P118, P119, P120, P121, P122, P123.

U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094,

TABLE A.1 (Cont'd)

4. **DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF** (continued)
U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, U138, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U151, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359.

5. **MICHIGAN HAZARDOUS WASTES**
001D, 003D, 001K, 002K, 011U, 033U, 054U, 059U, 070U, 072U, 101U, 131U, 139U, 150U, 155U, 161U, 001U, 002U, 003U, 004U, 005U, 006U, 007U, 008U, 009U, 012U, 163U, 172U, 174U, 013U, 014U, 015U, 016U, 017U, 020U, 021U, 022U, 023U, 024U, 025U, 027U, 028U, 029U, 030U, 032U, 034U, 036U, 037U, 038U, 040U, 041U, 042U, 043U, 044U, 046U, 047U, 048U, 049U, 050U, 051U, 052U, 055U, 056U, 057U, 058U, 061U, 063U, 064U, 065U, 068U, 071U, 073U, 074U, 075U, 076U, 077U, 078U, 079U, 080U, 082U, 083U, 086U, 088U, 089U, 090U, 092U, 093U, 094U, 095U, 096U, 097U, 098U, 099U, 100U, 102U, 103U, 104U, 106U, 108U, 110U, 111U, 112U, 113U, 114U, 115U, 116U, 117U, 118U, 119U, 120U, 121U, 122U, 124U, 127U, 128U, 129U, 132U, 134U, 135U, 136U, 137U, 138U, 140U, 141U, 142U, 143U, 144U, 146U, 147U, 148U, 151U, 152U, 153U, 154U, 157U, 158U, 159U, 160U, 162U, 164U, 165U, 166U, 167U, 168U, 169U, 170U, 171U, 173U, 175U.

TABLE A.2
WASTE CODES ACCEPTED AT THE TREATMENT FACILITY

1. CHARACTERISTIC WASTES

D002	Corrosive
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D010	Selenium
D011	Silver
001D	Copper
003D	Zinc
D018	Benzene
D019	Carbon Tetrachloride
D020	Chlordane
D021	Chlorobenzene
D022	Chloroform
D023	o-Cresol
D024	m-Cresol
D025	p-Cresol
D026	Cresol
D027	1,4-Dichlorobenzene
D028	1,2-Dichloroethane
D029	1,1-Dichloroethylene
D030	2,4-Dinitrotoluene
D031	Heptachlor
D032	Hexachlorobenzene
D033	Hexachlorobutadiene
D034	Hexachloroethane
D035	Methyl Ethyl Ketone
D036	Nitrobenzene
D037	Pentachlorophenol
D038	Pyridine
D039	Tetrachloroethylene
D040	Trichloroethylene
D041	2,4,5-Trichlorophenol
D042	2,4,6-Trichlorophenol
D043	Vinyl Chloride

TABLE A.2(Cont'd)

2. LISTED WASTES

F001	K026	K094	P001	P049	P104
F002	K027	K095	P002	P050	P105
F003	K028	K096	P003	P051	P106
F004	K029	K097	P004	P054	P108
F005	K030	K098	P005	P056	P109
F006	K031	K099	P006	P057	P110
F007	K032	K100	P007	P058	P111
F008	K033	K101	P008	P059	P112
F009	K034	K102	P009	P060	P113
F010	K035	K103	P010	P062	P114
F011	K036	K104	P011	P063	P115
F012	K037	K105	P012	P064	P116
F019	K038	K106	P013	P065	P118
F024	K039	K107	P014	P066	P119
F025	K040	K108	P015	P067	P120
F032	K041	K109	P016	P068	P121
F034	K042	K110	P017	P069	P122
F035	K043	K111	P018	P070	P123
F037	K044	K112	P020	P071	
F038	K045	K113	P021	P072	
F039	K046	K114	P022	P073	
	K047	K115	P023	P074	
K001	K048	K116	P024	P075	
K002	K049	K117	P026	P076	
K003	K050	K118	P027	P077	
K004	K051	K123	P028	P078	
K005	K052	K124	P029	P081	
K006	K060	K125	P030	P082	
K007	K061	K126	P031	P084	
K008	K062	K131	P033	P085	
K009	K064	K132	P034	P087	
K010	K065	K136	P036	P088	
K011	K066	K141	P037	P089	
K013	K069	K142	P038	P092	
K014	K071	K143	P039	P093	
K015	K073	K144	P040	P094	
K016	K083	K145	P041	P095	
K017	K084	K147	P042	P096	
K018	K085	K148	P043	P097	
K019	K086	K149	P044	P098	
K020	K087	K150	P045	P099	
K021	K088	K151	P046	P101	
K022	K090		P047	P102	
K023	K091		P048	P103	
K024	K093				
K025					

TABLE A.2 (Cont'd)

U001	U045	U089	U133	U176	U225
U002	U046	U090	U134	U177	U226
U003	U047	U091	U135	U178	U227
U004	U048	U092	U136	U179	U228
U005	U049	U093	U137	U180	U234
U006	U050	U094	U138	U181	U235
					U236
U007	U051	U095	U140	U182	U237
U008	U052	U096	U141	U183	U238
U009	U053	U097	U142	U184	U239
U010	U055	U098	U143	U185	U240
U011	U056	U099	U144	U186	U243
U012	U057	U101	U145	U187	U244
U014	U058	U102	U146	U188	U246
U015	U059	U103	U147	U189	U247
U016	U060	U105	U148	U190	U248
U017	U061	U106	U149	U191	U249
	U062	U107		U192	U328
				U193	U353
U018	U063	U108	U150	U194	U359
U019	U064	U109	U151	U196	
U020	U066	U110	U152	U197	
U021	U067	U111	U153	U200	
U022	U068	U112	U154	U201	
U023	U069	U113	U155	U202	
U024	U070	U114	U156	U203	
U025	U071	U115	U157	U204	
U026	U072	U116	U158	U205	
U027	U073	U117	U159	U206	
U028	U074	U118	U160	U207	
U029	U075	U119	U161	U208	
U030	U076	U120	U162	U209	
U031	U077	U121	U163	U210	
U032	U078	U122	U164	U211	
U033	U079	U123	U165	U213	
U034	U080	U124	U166	U214	
U035	U081	U125	U167	U215	
U036	U082	U126	U168	U216	
U037	U083	U127	U169	U217	
U038	U084	U128	U170	U218	
U039	U085	U129	U171	U219	
U041	U086	U130	U172	U220	
U042	U087	U131	U173	U221	
U043	U088	U132	U174	U222	
U044				U223	

TABLE A.2 (Cont'd)

001K	160U	041U	073U	103U	134U
002K	161U	042U	167U	104U	135U
001U	021U	043U	074U	106U	136U
002U	022U	044U	075U	168U	137U
003U	023U	046U	076U	108U	138U
004U	024U	164U	077U	169U	139U
005U	025U	047U	078U	110U	140U
006U	027U	048U	079U	111U	154U
007U	028U	049U	080U	112U	171U
157U	152U	050U	152U	113U	172U
008U	029U	051U	082U	114U	173U
009U	030U	052U	083U	115U	141U
158U	032U	054U	086U	116U	142U
011U	033U	055U	088U	117U	143U
012U	034U	056U	089U	118U	144U
013U	150U	165U	090U	119U	174U
014U	162U	057U	092U	120U	175U
147U	036U	058U	093U	121U	155U
148U	037U	059U	094U	122U	146U
159U	038U	166U	095U	124U	
015U	163U	061U	096U	127U	
016U	151U	063U	097U	128U	
017U	040U	064U	098U	129U	
020U		065U	099U	170U	
		068U	100U	153U	
		070U	101U	131U	
		071U	102U	132U	
		072U			

SECTION B

FACILITY DESCRIPTION

This section provides a general description of Dynecol, Inc. as required by Michigan Act 64 Rule 299.9504(1)(c) which incorporates 40 CFR 270.14(b) by reference. This description is intended only to acquaint the permit application/permit writer with an overview of the facility. More complete details can be found in other parts of this permit application.

B-1 GENERAL DESCRIPTION [40 CFR 270.14(b)(1)]

Dynecol, Inc. is a commercial hazardous waste treatment and storage facility located in the City of Detroit in Wayne County, Michigan. The street and mailing address is : 6520 Georgia Street, Detroit, MI 48211. Figure B.1 is a location map and Figure B.2 is a regional topographic map. Figure B.3 is a site plan showing permitted facility boundaries, major buildings, treatment areas and hazardous waste storage areas. Process and design information for the treatment and storage units is provided in Section D.

B-1a Treatment Facility

Dynecol, Inc. is designed and permitted under Michigan Act 64 to treat 144,000 gallons per day of hazardous wastes and store up to 20,000 gallons of hazardous wastes in the treatment facility (part of total permitted storage capacity of 61,000 gallons). The hazardous wastes received for treatment are characteristic wastes, i.e, corrosives, TC metals, TC organics, and Michigan hazardous waste numbers 001D and 003D, and also listed hazardous wastes, i.e., K062, F006, and F019. Dynecol also accepts Other Listed Hazardous Wastes which are referenced in Section D. These are listed wastes, including wastes generated as a result of the mixture and derived from rules, that are otherwise similar to the characteristics of the wastes mentioned above. All of these wastes are delivered to the treatment facility in bulk tankers. Other materials that are handled at this facility include non-hazardous industrial wastes and recycled materials which are used as effective substitutes for commercial chemical products.

Hazardous wastes are stored and processed in above-ground, corrosion-resistant vessels. One tank, with capacity of 20,000 gallons, is available for storage of hazardous wastes prior to processing. Treated effluent is discharged to the City of Detroit Sanitary Sewer System in accordance with the requirements of Dynecol's Wastewater Discharge Permit (See Appendix A).

Hazardous wastes are processed at the facility using a combination of primary treatment, secondary treatment, and solids dewatering. Primary treatment is performed in any of three 20,000 gallon, above-ground tanks by means of chemical oxidation, chemical reduction, neutralization, adsorption and other possible treatments which will be discussed further in Section D. Secondary treatment is performed in any of four 20,000 gallon above-ground tanks by means of chemical precipitation, flocculation, detoxification, clarification, sedimentation, chemical fixation, and lime stabilization. Solids generated from primary and secondary processes are dewatered by pressure filtration. Solids which may result in a hazardous waste sludge are segregated from those resulting in a non-hazardous waste sludge. Dewatered solids are discharged from the filter presses directly into solid transport vehicle located beneath each press. These sludges are recycled or disposed of in either a hazardous or a solid waste landfill, in compliance with provisions defined in 40 CFR 268.

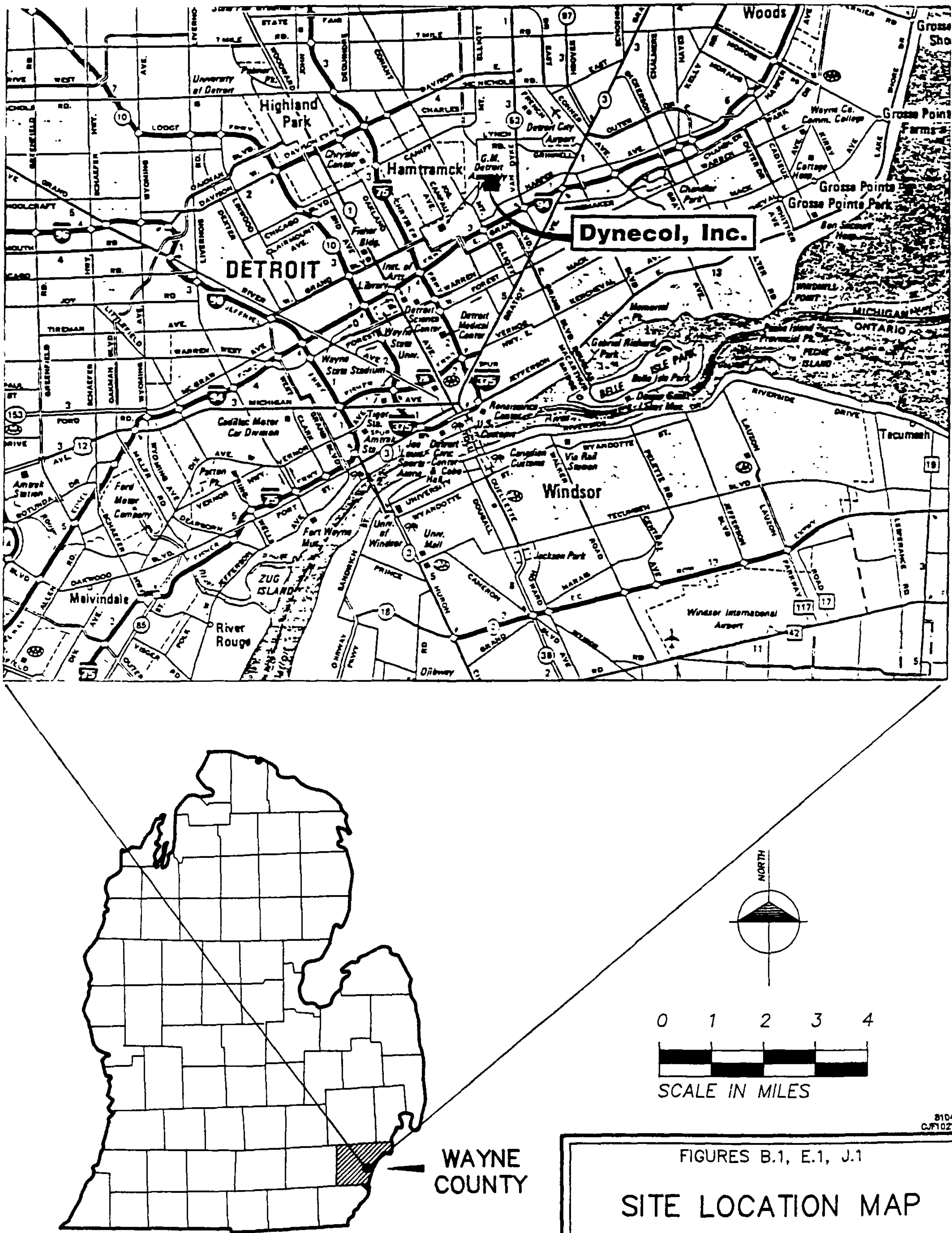
Additionally, certain listed wastes are treated in a separate system that consists of a 20,000 gallon above-ground treatment tank and a filter press.

B-1b Container Management Facility

The container management facility (CMF) at Dynecol receives, transfers, and stores hazardous wastes in containers of various sizes and in bulk. This facility is designed to contain flammable liquids, in accordance with BOCA, NFPA, and NEC codes for Class I, II, and III liquids. It consists of two loading docks, eight isolation bays, a waste bulking and transfer area, and a drum washing bay. Process and design information is provided in Section D.

Incoming wastes are sorted in compatible waste groups and stored in designated storage bays. Compatible wastes are bulked in the bulking and transfer area which is adequately ventilated and equipped with fume hoods and an air emission control system. RCRA-empty containers are generally rinsed and crushed for recycling/disposal. Rinsates from the container washing process are containerized for appropriate disposal.

The container management facility has a total permitted storage capacity of 41,000 gallons (part of total permitted storage capacity of 61,000 gallons) for hazardous wastes (equivalent to 711 55-gallon drums and one storage tank (#28) with capacity of 1,900 gallons). The drums are stored in eight separate storage bays with a storage capacity of up to two levels of 60 drums each. Some wastes are temporarily stored until they are shipped off-site to an appropriate disposal, recovery, or recycling facility. Other hazardous wastes may be transferred to and treated in Dynecol's treatment facility.



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FIGURES B.1, E.1, J.1

SITE LOCATION MAP

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994 81045

EARTH TECH

14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

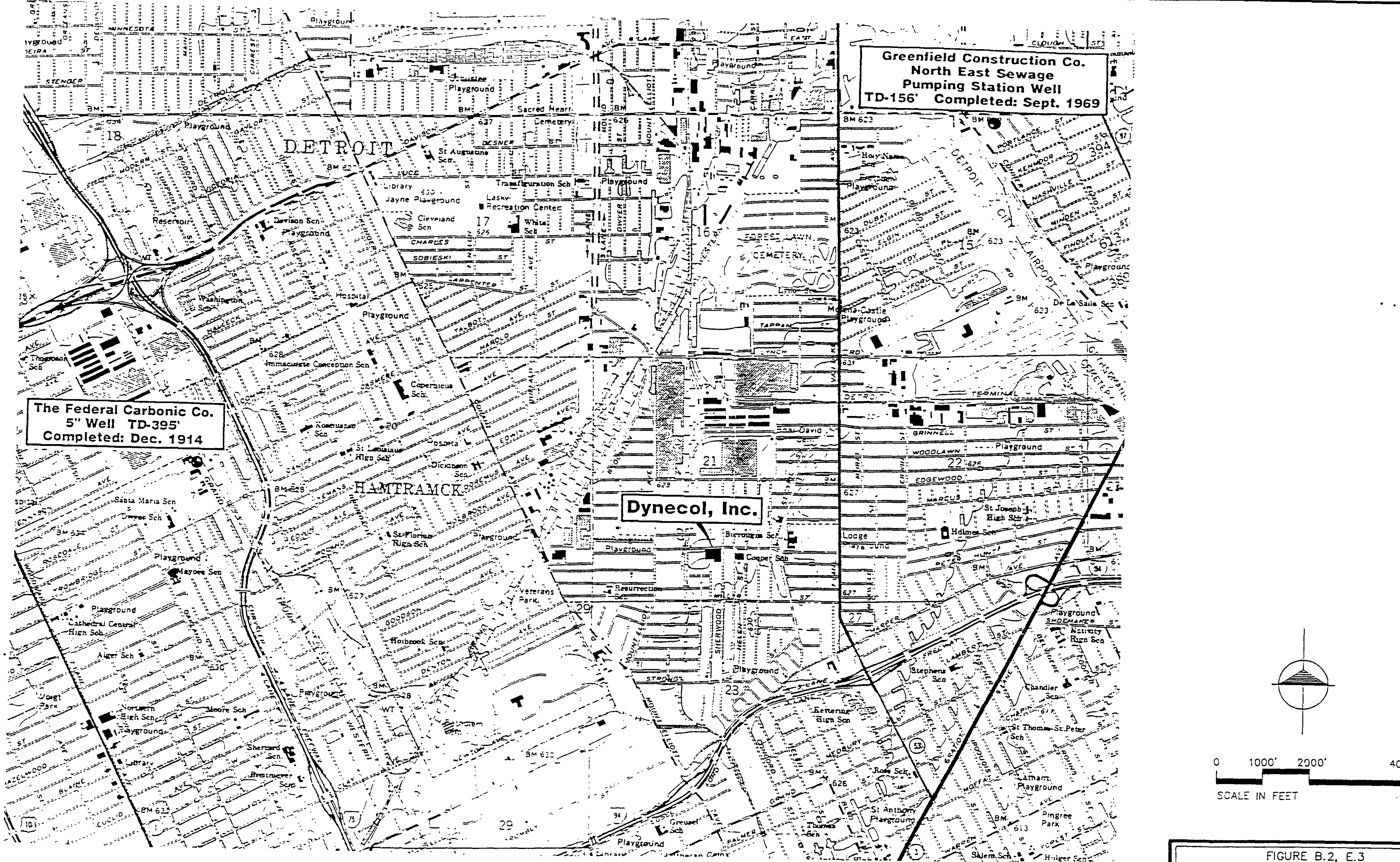

FIGURE B.2, E.3

REGIONAL TOPOGRAPHIC MAP

DYNECOL, INC.
DETROIT, MICHIGAN

B-1c Summary of Regulated Portion of Facility

In summary, the regulated portion of Dynecol facility consists of the following:

- Two unloading areas with spill collection and containment structures (the container storage unloading area is covered);
- Three primary treatment vessels (20,000 gallons each) with a concrete secondary containment area;
- Four secondary treatment vessels (20,000 gallons each) located in a building with secondary containment;
- One listed/Other Listed Wastes treatment vessel (20,000 gallons) located in a building with concrete secondary containment;
- One hazardous waste storage tank (20,000 gallons) with concrete secondary containment area;
- Three filter presses located within a building which has drainage system to a secondary containment area;
- An enclosed container management facility with permitted capacity for 41,000 gallons (equivalent to 711 55-gallon drums in eight bays and a 1,900 gallon storage tank with secondary containment).

B-2 TOPOGRAPHIC MAP [40 CFR 270.14(b)(19)]

This information is provided in Figure B.4. A two-foot contour interval for the topographic map is not practical due to the flatness of the site where local relief is not more than one foot between property lines and the pattern of surface flow is restricted to on-site infiltration. A regional topographic map that includes the Dynecol facility and surrounding areas is contained in Figure B.2. Other information provided in association with the topographic map is summarized in the following sections.

B-2a 100-Year Floodplain

The Dynecol facility is not located within the boundary of a 100-year floodplain. This determination is made after review of the Flood Insurance Rate Map prepared under the National Flood Insurance Program for this area. Figure B.5 highlights the panel in which Dynecol facility is located, a zone C, which represents area of minimum flooding (Zone A is within the 100-year floodplain and Zone B is between the 100-year and 500-year floodplain). The National Flood Insurance Program did not develop Zone C area panels due to minimal flooding within these areas.

B-2b Surrounding Land Uses

This facility is located within a mixed industrial and residential area. Immediately north, west, and south west of the facility are areas of industrial activities and east and south east of the facility are mainly vacant lots. Residential land uses border along the northeastern edge of the facility with a school located in the second block east of the facility (See Figure B.4). A rail line is also found about 500 feet west of the facility. Additional surrounding land uses is provided in Section J.

B-2c Hazardous Waste Management Facility Boundary

The Dynecol facility occupies approximately 2.0 acres of land in the southeast quarter of the southwest quarter of Section 21, Township 1 South, Range 12 East in Wayne County, Michigan. Figure B.3 delineates the boundaries of the existing hazardous waste management units as well as for the Dynecol site as a whole.

B-2d Wind Rose

Figure B.6 contains a wind rose compiled from 1948 to 1978 data collected at the City of Detroit Airport, located about two miles northeast of the Dynecol facility, indicating the predominant wind direction for this area is from the west and southwest.

B-2e Access Control

The Dynecol site is surrounded on all sides by a six-foot chain-link fence with barbed wire top. Access to the site is controlled at five points, three located along Georgia Street, i.e., two automatic slide gates (one next and one about 50 feet west of the filter press building); and one roll-up door for the treatment building; and two entrances located along Sherwood Street, i.e., two automatic slide gates for vehicular access to the main office building and the east side of the facility.

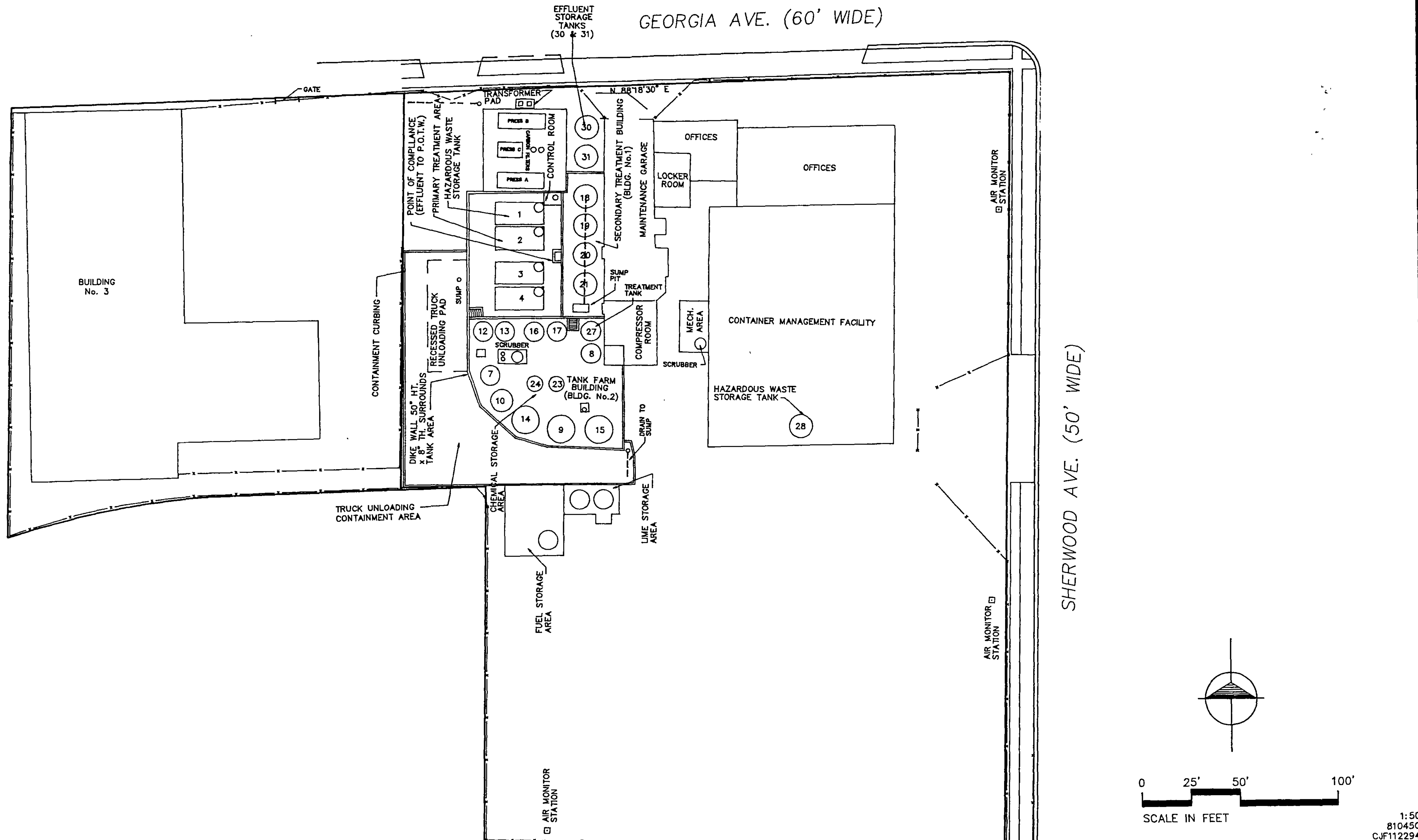

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FIGURE B.3, G.1, F.1

SITE PLAN

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994

81045

EARTH TECH 14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

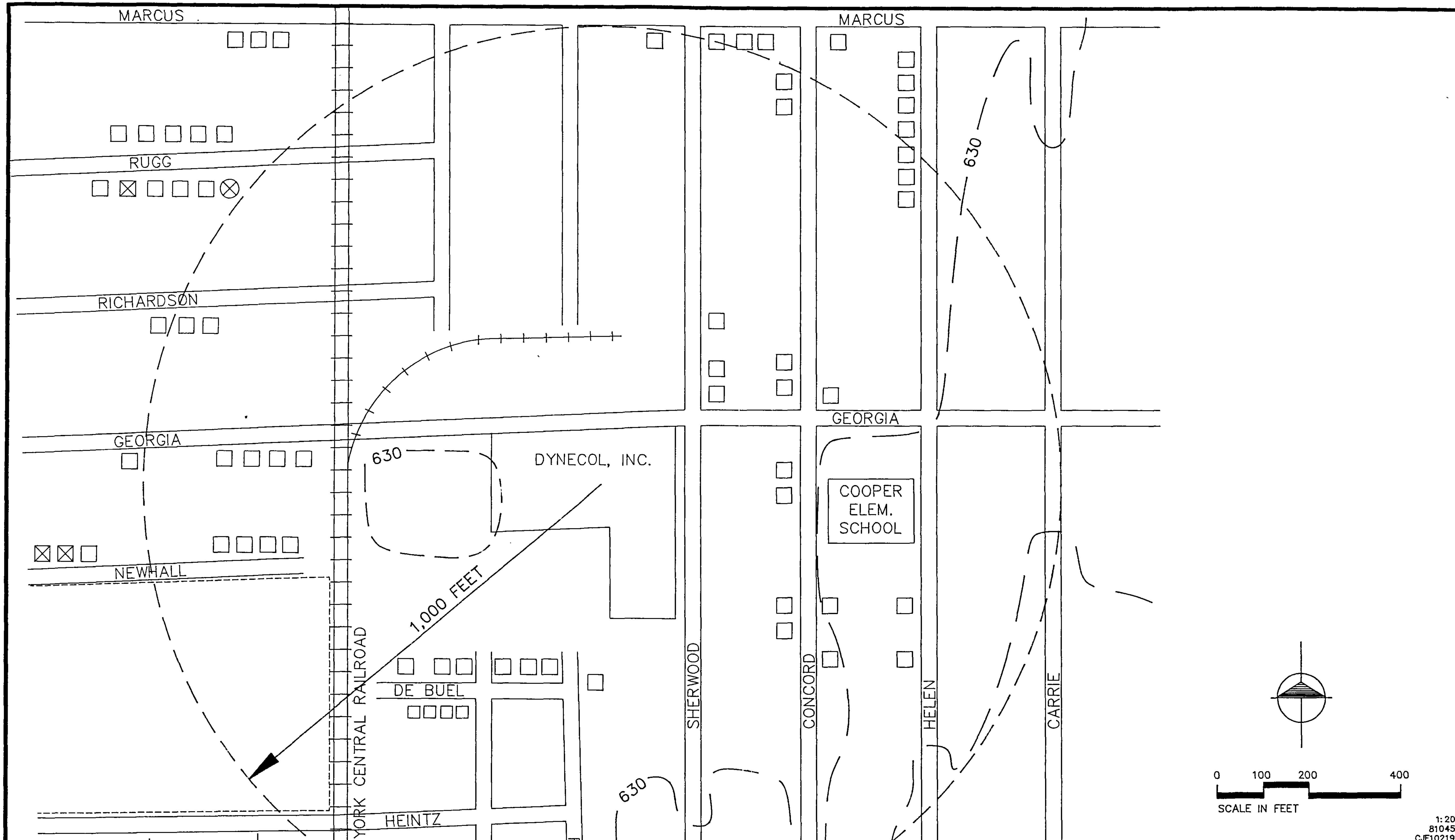


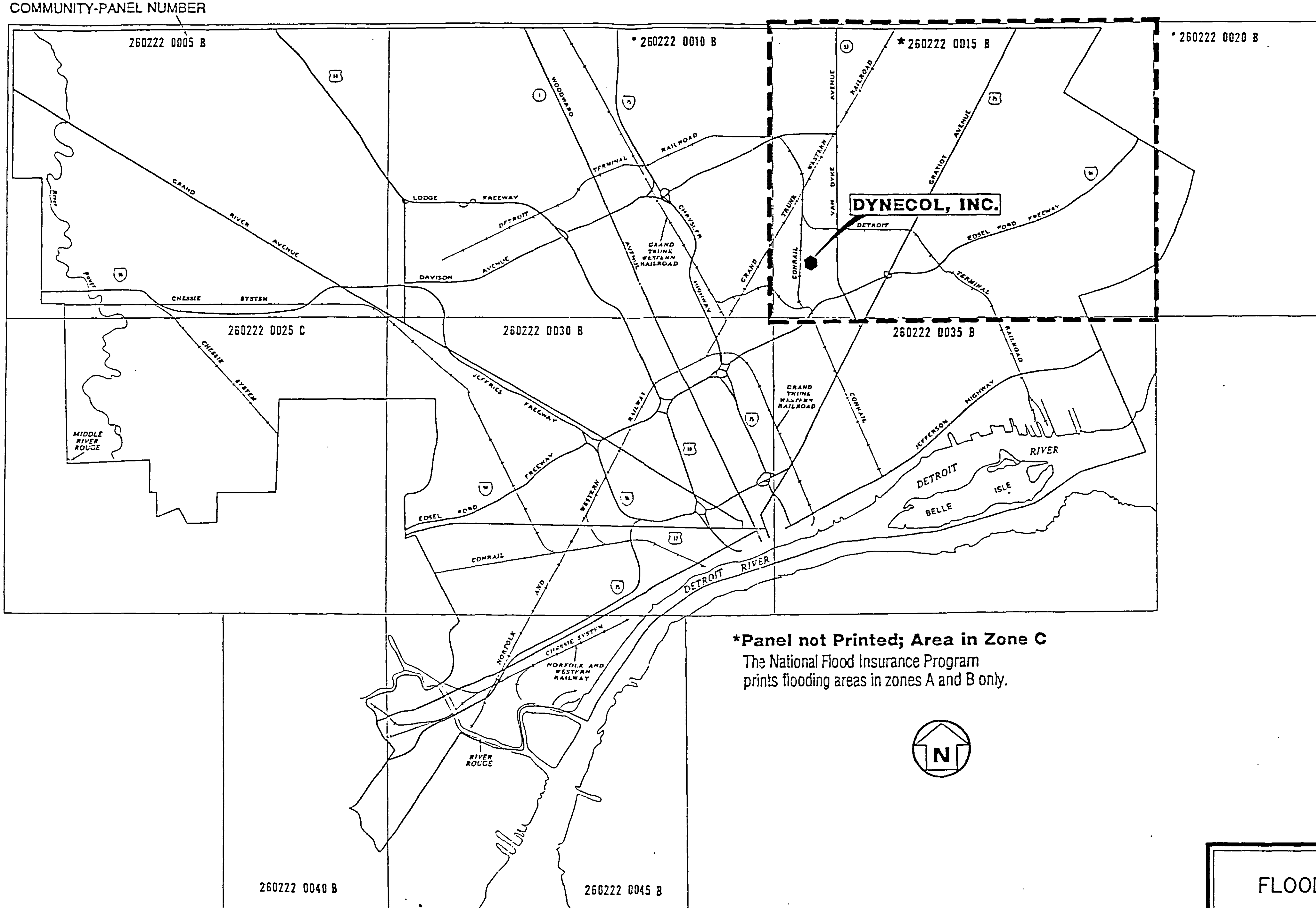
FIGURE B.4, E.4

LOCAL TOPOGRAPHIC MAP

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994 81045

EARTH TECH 14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678



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81045E
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FIGURE B.5

FLOOD INSURANCE MAP

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994 81045

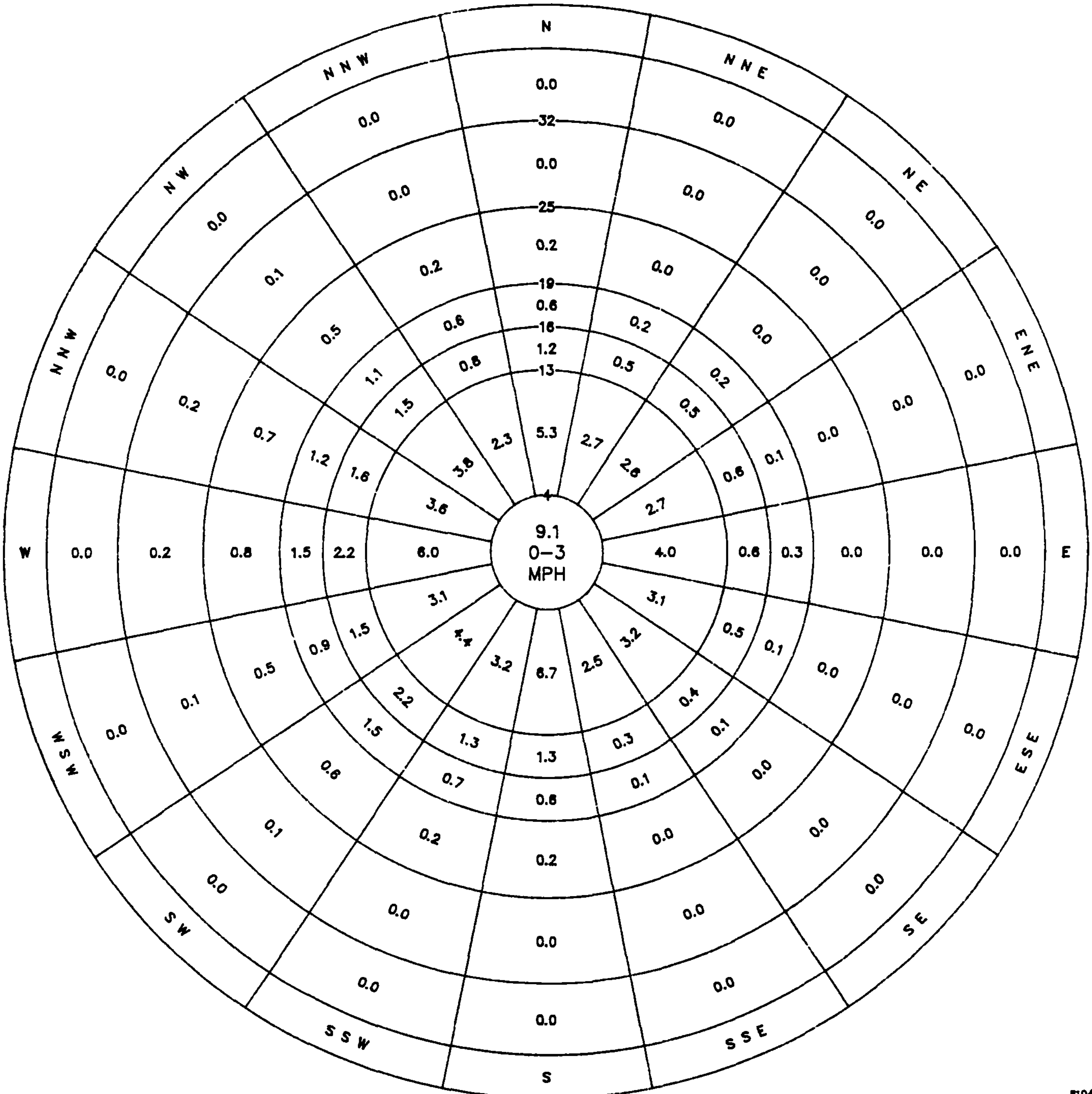

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FIGURE B.6

WIND ROSE

(COMPILED FROM 1948 – 1978 DATA)

DYNECOL, INC.
DETROIT, MICHIGAN

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Access control points are illustrated on Figure B.3.

B-2f Injection and Withdrawal Wells

The site has no injection or withdrawal wells. All water used at the site and within the surrounding neighborhoods is supplied by the City of Detroit. A review of public records revealed no domestic groundwater supply wells within a two-mile radius of the Dynecol facility.

B-2g Treatment and Storage Areas, Buildings, and Other Structures

Figure B.3 illustrates the locations of the hazardous waste treatment and storage areas, buildings, and other structures on Dynecol site.

B-2h Recreational Areas

Recreational areas located within a half mile of the Dynecol facility include Cooper Elementary School, Burroughs School, Resurrection School, and the Biraga Playground (Figure B.2).

B-2i Runoff Control Systems

Site drainage and surface runoff are controlled by concrete and asphalt pavement and storm sewers. A low curbing is located along the western and southern border of the site to control surface runoff from the facility. Drains located across the driveways collect any surface flow that might otherwise become runoff. The hazardous waste treatment and storage areas and the container management facility unloading area are enclosed and protected from the weather to prevent any accumulation of precipitation, with the exception of the three primary treatment vessels and one regulated storage tank. These four tanks, with 80,000 gallons total capacity, have a secondary containment capacity of 100,000 gallons. The dike walls surrounding the tanks and unloading areas also prevent the release of any runoff to off-site areas. These runoff control systems are identified in Appendix D-2d.

B-2j Access and Internal Roads

Access to the site is restricted to Georgia and Sherwood streets. Vehicular traffic within the facility is limited to the parking lots, the driveways, and the loading/unloading areas.

Vehicle circulation on the site is designated as a one-way direction, from east to west. Figure B.3 also illustrates vehicle entrance and exit points.

B-2k Storm, Sanitary, and Process Sewers

Treated process wastewaters are discharged to the City of Detroit's wastewater treatment plant. Sanitary wastes and storm water runoff from the facility are also discharged to the wastewater treatment plant through a combined sewer line. The locations of the sewer lines are identified in Appendix D.

B-2l Loading and Unloading Area

Hazardous wastes received for treatment are unloaded from bulk tankers in a recessed truck unloading pad along the waste treatment building. The unloading pad is provided with corrosion resistant coatings, spill control structures and equipment to contain and remove any spills or leaks. Containers of hazardous wastes are loaded and unloaded under a roof within the container management facility. Containerized wastes may also be bulked into tankers within this facility as described in Section D. This loading and unloading area is equipped with spill control structures and equipment to contain and remove any spills or leaks.

B-2m Fire Control Facilities

There are three fire hydrants close to the Dynecol site. A hydrant is located at the southwest corner of Georgia and Sherwood Avenues, another one about 350 feet south of Georgia Street on Sherwood Avenue, and the last one about 250 feet north of Georgia Street on Sherwood Avenue. The nearest fire station is approximately 500 yards from the Dynecol site.

B-2n Surface Waters

There are no surface water features or wetlands on or nearby the Dynecol facility. The nearest surface water is the Detroit River located approximately four miles southeast of the Dynecol facility.

B-3 LOCATION INFORMATION [40 CFR 270.14(b)(11)]

B-3a Seismic Standard

The seismic standard is not applicable to facilities in Michigan.

B-3b Floodplain Standard

The facility is not located within a 100-year floodplain. Refer to Section B-2a and Figure B.5.

B-4 TRAFFIC PATTERNS

Waste transport vehicles coming to and leaving from the Dynecol facility utilize I-94, Mt. Elliot Avenue, the section of Georgia Street between Mt. Elliot and Sherwood Avenue, and the section of Sherwood Avenue between Georgia Street and the two automatic slide gates on the east side of the facility. Vehicular access to the facility is from Sherwood Avenue through the gate located on the east side of the facility. Vehicles enter at this gate and travel east to the facility's exit at the western gate. All traffic on this site is directed to proceed in a one-way direction from east to west. The surfacing of access roads at the Dynecol facility is concrete. The load-bearing capacity of this surface is sufficient to handle the expected volume and estimated weight of the truck traffic using the facility. Truck parking areas are surfaced with gravel and the office parking area is paved.

It is estimated that existing traffic volume at the facility is forty-three private passenger vehicles per day, about fifteen to twenty waste and material transporting trucks per day, and three to five vendor vehicles per day.

SECTION C

WASTE CHARACTERISTICS

This section describes the chemical and physical nature of the hazardous wastes stored and treated at Dynecol and the Waste Analysis Plan for sampling, testing, and evaluating the wastes to ensure that sufficient information is available for their safe handling. The information submitted is in accordance with the requirements of Michigan Act 64 R 299.9504(1)(c) which incorporates 40 CFR 270.14(b) by reference.

C-1 WASTE CHARACTERISTICS [40CFR 270.14(b)(2) AND 264.13(a)]

C-1a Introduction

Dynecol operates a container management facility and a bulk waste treatment facility. Before any hazardous wastes are accepted for storage, transfer, and/or treatment, Dynecol obtains from the generator (1) a detailed waste approval form, (2) a chemical analysis, if necessary and (3) a representative sample of the waste.

Dynecol inspects each load of hazardous waste received at the facility by fingerprint testing and, if necessary, performs further analysis to determine whether the waste shipment matches the identity of the waste described on the waste characterization or the accompanying manifest. The procedures for inspection, sampling, and analysis are outlined in the waste analysis plan.

C-1b List of Hazardous Wastes Managed at the Container Management Facility

The hazardous wastes that are received at the container management facility are listed in Table C.1. More details on these wastes can be found in Appendix C.1. The hazard code for each waste is also listed. The following wastes and waste categories are not accepted at the facility:

- Wastes containing dioxins,
- Wastes containing greater than 50 ppm PCBs,
- Radioactive wastes, and
- Explosive wastes.

Prior to receipt of any wastes into the container management facility, waste characterization summaries of each waste type are provided to Dynecol by the generator. Copies of typical waste approval forms are included in Appendix C.2.

C-1c List of Hazardous Wastes Managed at the Hazardous Waste Bulk Treatment Facility

The hazardous wastes managed at the bulk treatment facility and the basis for hazard designation are summarized in Table C.2. Appendix C.3 contains copies of waste approval forms for typical wastes accepted for storage and/or treatment. The types of hazardous wastes treated and/or stored at the Dynecol's treatment facility are as follows:

C-1c(i) Listed Hazardous Wastes

- **Spent pickle liquor from steel finishing operations (K062).** Spent pickle liquors may contain dilute sulfuric or hydrochloric acid, heavy metals and low concentration of organic constituents.

- **Wastewaters(including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes (K157).** These influent waste streams are generally liquid, aqueous, and may contain some organic compounds.

- **Wastewater treatment sludges from electroplating operations (F006).** These wastes may contain various heavy metals and low concentrations of organic constituents. The influent waste streams may also be acidic or alkaline in nature. Waste streams designated as F006 are not accepted for treatment at Dynecol if the concentration of reactive cyanide exceeds 20 ppm.

- **Wastewater treatment sludges from chemical conversion coating of aluminum (F019).** These wastes may contain various heavy metals. The influent waste streams are generally liquid, aqueous, and may contain some organic compounds. Waste streams designated as F019 are not accepted for treatment at Dynecol if the concentration of reactive cyanide exceeds 20 ppm.

C-1c(ii) Other Listed Hazardous Wastes

Dynecol accepts listed hazardous wastes (including wastes generated as a result of the mixture and derived from rule) which contain less than 1% by weight total organic carbon (TOC) and are otherwise characteristically similar to those wastes as referenced in sections C-1c(i) and C-1c(iii).

Under the Other Listed Hazardous Wastes category, Dynecol will not accept wastes that exhibit any of the following:

- Wastes containing dioxins,
- Wastes containing more than 50 ppm PCBs,
- Radioactive wastes, and
- Explosive wastes.

C-1c(iii) Characteristically Hazardous Wastes

- **Hazardous waste exhibiting the characteristics of corrosivity (D002).** Liquid solutions may exhibit the characteristic of corrosivity by having either of the following properties: (1) being either acidic with pH of 2.0 or less or alkaline with a pH of 12.5 or more, or (2) corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 deg C (130 deg F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69.

- **Hazardous wastes exhibiting the characteristics of TC metal toxicity** [arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), silver (D011), copper (001D), and zinc (003D)]. They are typically aqueous solutions and contain varying concentrations of metals.

- **Hazardous wastes exhibiting the characteristics of TC organic toxicity** [benzene (D018), carbon tetrachloride (D019), chlordane (D020), chlorobenzene (D021), chloroform (D022), o-Cresol (D023), m-Cresol (D024), p-Cresol (D025), cresol (D026), 1,4-dichlorobenzene (D027), 1,2-dichloroethane (D028), 1,1-dichloroethylene (D029), 2,4-dinitrotoluene (D030), heptachlor (D031), hexachlorobenzene (D032), hexachlorobutadiene (D033), hexachloroethane (D034), methyl ethyl ketone (D035), nitrobenzene (D036), pentachlorophenol (D037), pyridine (D038), tetrachloro-ethylene (D039), trichloroethylene (D040), 2,4,5-tri-chlorophenol (D041), 2,4,6-trichlorophenol (D042), vinyl chloride (D043)]. They are typically aqueous solutions and contain varying concentrations of organics.

TABLE C.1*
PART A

1) CHARACTERISTICALLY HAZARDOUS WASTES

D001	D002	D003	D004	D005	D006	D007	D008	D009	D010
D011	D012	D013	D014	D015	D016	D017	D018	D019	D020
D021	D022	D023	D024	D025	D026	D027	D028	D029	D030
D031	D032	D033	D034	D035	D036	D037	D038	D039	D040
D041	D042	D043							

2) HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

F001	F002	F003	F004	F005	F006	F007	F008	F009	F010
F011	F012	F019	F024	F025	F032	F034	F035	F037	F038
F039									

3) HAZARDOUS WASTES FROM SPECIFIC SOURCES

K001	K002	K003	K004	K005	K006	K007	K008	K009	K010
K011	K013	K014	K015	K016	K017	K018	K019	K020	K021
K022	K023	K024	K025	K026	K027	K028	K029	K030	K031
K032	K033	K034	K035	K036	K037	K038	K039	K040	K041
K042	K048	K049	K050	K051	K052	K060	K061	K062	K064
K065	K066	K069	K071	K073	K083	K084	K085	K086	K087
K088	K090	K091	K093	K094	K095	K096	K097	K098	K099
K100	K101	K102	K103	K104	K105	K106	K107	K108	K109
K110	K111	K112	K113	K114	K115	K116	K117	K118	K123
K124	K125	K126	K131	K132	K136	K141	K142	K143	K144
K145	K147	K148	K149	K150	K151	K156	K157	K158	K159
K160	K161								

4) DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF

P001	P002	P004	P005	P008	P010	P013	P016	P017	P021
P022	P024	P027	P028	P029	P030	P031	P033	P034	P036
P037	P038	P039	P040	P041	P042	P043	P044	P045	P046
P047	P048	P049	P051	P054	P057	P058	P059	P062	P066
P068	P069	P071	P072	P074	P077	P082	P084	P088	P092
P097	P098	P099	P101	P102	P103	P104	P105	P106	P109
P111	P118	P119	P121	P122	P127	P128	P185	P188	P189
P190	P191	P192	P194	P196	P197	P198	P199	P201	P202
P203	P204	P205							

U001	U002	U003	U004	U005	U007	U008	U009	U010	U011
U012	U014	U015	U016	U017	U018	U019	U020	U021	U022
U024	U025	U026	U027	U028	U029	U030	U031	U032	U033
U034	U035	U036	U037	U038	U039	U041	U042	U043	U044
U045	U047	U048	U049	U050	U051	U052	U055	U056	U057
U058	U059	U060	U061	U062	U063	U064	U067	U068	U069
U070	U071	U072	U073	U074	U075	U076	U077	U078	U079
U080	U081	U082	U083	U084	U085	U086	U087	U088	U089
U090	U091	U092	U093	U094					

4) DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF(Cont.)

U095	U096	U097	U099	U101	U102	U103	U105	U106	U107
U108	U109	U110	U111	U112	U113	U114	U115	U116	U117
U118	U119	U120	U121	U122	U123	U124	U125	U126	U127
U128	U129	U131	U132	U133	U134	U135	U136	U137	U138
U140	U141	U142	U143	U144	U145	U146	U147	U148	U149
U150	U151	U152	U153	U154	U155	U156	U157	U158	U159
U161	U162	U163	U164	U165	U166	U167	U168	U169	U170
U171	U172	U173	U174	U176	U177	U178	U179	U180	U181
U182	U183	U184	U185	U186	U187	U188	U189	U190	U191
U192	U193	U194	U197	U200	U201	U202	U203	U204	U205
U206	U207	U208	U209	U210	U211	U213	U214	U215	U216
U217	U218	U219	U220	U221	U222	U225	U226	U227	U228
U234	U235	U236	U238	U239	U240	U243	U244	U246	U248
U249	U271	U277	U278	U279	U280	U328	U353	U359	U364
U365	U366	U367	U372	U373	U375	U376	U377	U378	U379
U381	U382	U383	U384	U385	U386	U387	U389	U390	U391
U392	U393	U394	U395	U396	U400	U401	U402	U403	U404
U407	U409	U410	U411						

, ...CHIGAN HAZARDOUS WASTES

001D	003D	001K	002K	011U	033U	054U	059U	070U	072U
101U	131U	139U	150U	155U	161U	001U	002U	003U	004U
005U	006U	007U	008U	009U	012U	163U	172U	174U	013U
014U	015U	016U	017U	020U	021U	022U	023U	024U	027U
028U	029U	034U	036U	037U	038U	041U	042U	043U	044U
046U	047U	048U	049U	050U	051U	052U	056U	057U	058U
061U	063U	064U	065U	068U	071U	073U	075U	076U	078U
079U	080U	082U	083U	086U	088U	089U	090U	094U	095U
096U	097U	098U	099U	100U	102U	103U	106U	108U	110U
113U	114U	115U	116U	117U	118U	120U	121U	122U	124U
127U	128U	129U	132U	134U	137U	138U	140U	141U	142U
143U	144U	146U	147U	148U	151U	154U	157U	158U	159U
162U	164U	165U	166U	167U	168U	169U	170U	171U	175U

*All storage/bulking processes are performed in accordance with air control permit conditions.

TABLE C.1
PART B
ADDITIONAL WASTE CODES ACCEPTABLE AT THE CONTAINER MANAGEMENT FACILITY WITH LIMITATIONS*

K043	P003	U006	160U
K044	P006	U023	025U
K045	P007	U046	030U
K046	P009	U053	032U
K047	P011	U066	040U
	P012	U130	055U
	P014	U160	074U
	P015	U196	077U
	P018	U223	152U
	P020	U237	092U
	P023	U247	093U
	P026	U098	104U
	P050		111U
	P056		112U
	P060		153U
	P063		135U
	P064		136U
	P065		119U
	P067		173U
	P070		
	P073		
	P075		
	P076		
	P078		
	P081		
	P085		
	P087		
	P089		
	P093		
	P094		
	P095		
	P096		
	P108		
	P110		
	P112		
	P113		
	P114		
	P115		
	P116		
	P120		
	P123		

*Contain less than 1% by weight total organic carbon (TOC), and are otherwise characteristically similar to wastes treated in the treatment facility (Refer to Table C.2 (Part A)).

TABLE C.2(Part A)
CHARACTERISTIC AND LISTED WASTE
TREATED AT DYNECOL

Waste Description	Hazardous Waste Code	Basis for Hazard Determination
Spent pickle liquor from steel finishing operations	K062	Corrosive & Toxic
Process wastes from electroplating operations	F006*	Toxic
Process wastes from the chemical conversion coating of aluminum	F019*	Toxic
Wastewaters(including scrubber waters, condenser waters, washwaters & separation waters) from the production of carbamates and carbamoyl oximes	K157*	Toxic
Liquid solutions	D002	Corrosive
Solutions and sludges	D004	TC toxic for arsenic
Solutions and sludges	D005	TC toxic for barium
Solutions and sludges	D006	TC toxic for cadmium
Solutions and sludges	D007	TC toxic for chromium
Solutions and sludges	D008	TC toxic for lead
Solutions and sludges	D009	TC toxic for mercury
Solutions and sludges	D010	TC toxic for selenium
Solutions and sludges	D011	TC toxic for silver
Solutions and sludges	001D	TC toxic for copper
Solutions and sludges	003D	TC toxic for zinc
Solutions and sludges	D018	TC toxic for benzene
Solutions and sludges	D019	TC toxic for carbon tetrachloride
Solutions and sludges	D021	TC toxic for chlorobenzene
Solutions and sludges	D022	TC toxic for chloroform
Solutions and sludges	D023	TC toxic for o-Cresol
Solutions and sludges	D024	TC toxic for m-Cresol
Solutions and sludges	D025	TC toxic for p-Cresol
Solutions and sludges	D026	TC toxic for cresol
Solutions and sludges	D027	TC toxic for 1,4-Dichlorobenzene
Solutions and sludges	D028	TC toxic for 1,2-Dichloroethane
Solutions and sludges	D029	TC toxic for 1,1-Dichloroethylene
Solutions and sludges	D030	TC toxic for 2,4-Dinitrotoluene
Solutions and sludges	D031	TC toxic for heptachlor
Solutions and sludges	D032	TC toxic for hexachlorobenzene
Solutions and sludges	D033	TC toxic for hexachlorobutadiene
Solutions and sludges	D034	TC toxic for hexachloroethane
Solutions and sludges	D035	TC toxic for methyl ethyl ketone
Solutions and sludges	D036	TC toxic for nitrobenzene
Solutions and sludges	D037	TC toxic for pentachlorophenol
Solutions and sludges	D038	TC toxic for pyridine
Solutions and sludges	D039	TC toxic for tetrachloroethylene
Solutions and sludges	D040	TC toxic for trichloroethylene
Solutions and sludges	D041	TC toxic for 2,4,5-trichlorophenol
Solutions and sludges	D042	TC toxic for 2,4,6-trichlorophenol
Solutions and sludges	D043	TC toxic for vinyl chloride

*The sludges that are generated from treating these process wastes are listed.
*F006/F019 is only accepted if reactive cyanide concentration is less than 20 ppm.

TABLE C.2
PART B
OTHER LISTED HAZARDOUS WASTES TREATED AT DYNECOL

F001	K028	K099	P006	P062	P119
F002	K029	K100	P007	P063	P120
F003	K030	K101	P008	P064	P121
F004	K031	K102	P009	P065	P122
F005	K032	K103	P010	P066	P123
F006*	K033	K104	P011	P067	P127
F007	K034	K105	P012	P068	P128
F008	K035	K106	P013	P069	P185
F009	K036	K107	P014	P070	P188
F010	K037	K108	P015	P071	P189
F011	K038	K109	P016	P072	P190
F012	K039	K110	P017	P073	P191
F019*	K040	K111	P018	P074	P192
F024	K041	K112	P020	P075	P194
F025	K042	K113	P021	P076	P196
F032	K043	K114	P022	P077	P197
F034	K044	K115	P023	P078	P198
F035	K045	K116	P024	P081	P199
F037	K046	K117	P026	P082	P201
F038	K047	K118	P027	P084	P202
F039	K048	K123	P028	P085	P203
	K049	K124	P029	P087	P204
K001	K050	K125	P030	P088	P205
K002	K051	K126	P031	P089	
K003	K052	K131	P033	P092	
K004	K060	K132	P034	P093	
K005	K061	K136	P036	P094	
K006	K062*	K141	P037	P095	
K007	K064	K142	P038	P096	
K008	K065	K143	P039	P097	
K009	K066	K144	P040	P098	
K010	K069	K145	P041	P099	
K011	K071	K147	P042	P101	
K013	K073	K148	P043	P102	
K014	K083	K149	P044	P103	
K015	K084	K150	P045	P104	
K016	K085	K151	P046	P105	
K017	K086	K156	P047	P106	
K018	K087	K157*	P048	P108	
K019	K088	K158	P049	P109	
K020	K090	K159	P050	P110	
K021	K091	K160	P051	P111	
K022	K093	K161	P054	P112	
K023	K094	P001	P056	P113	
K024	K095	P002	P057	P114	
K025	K096	P003	P058	P115	
K026	K097	P004	P059	P116	
K027	K098	P005	P060	P118	

TABLE C.2
PART B
(Cont'd)

U001	U045	U089	U133	U177	U223	U386
U002	U046	U090	U134	U178	U225	U387
U003	U047	U091	U135	U179	U226	U389
U004	U048	U092	U136	U180	U227	U390
U005	U049	U093	U137	U181	U228	U391
U006	U050	U094	U138	U182	U234	U392
U007	U051	U095	U140	U183	U235	U393
U008	U052	U096	U141	U184	U236	U394
U009	U053	U097	U142	U185	U237	U395
U010	U055	U098	U143	U186	U238	U396
U011	U056	U099	U144	U187	U239	U400
U012	U057	U101	U145	U188	U240	U401
U014	U058	U102	U146	U189	U243	U402
U015	U059	U103	U147	U190	U244	U403
U016	U060	U105	U148	U191	U246	U404
U017	U061	U106	U149	U192	U247	U407
U018	U062	U107	U150	U193	U248	U409
U019	U063	U108	U151	U194	U249	U410
U020	U064	U109	U152	U196	U271	U411
U021	U066	U110	U153	U197	U277	
U022	U067	U111	U154	U200	U278	
U023	U068	U112	U155	U201	U279	
U024	U069	U113	U156	U202	U280	
U025	U070	U114	U157	U203	U328	
U026	U071	U115	U158	U204	U353	
U027	U072	U116	U159	U205	U359	
28	U073	U117	U160	U206	U364	
29	U074	U118	U161	U207	U365	
U030	U075	U119	U162	U208	U366	
U031	U076	U120	U163	U209	U367	
U032	U077	U121	U164	U210	U372	
U033	U078	U122	U165	U211	U373	
U034	U079	U123	U166	U213	U375	
U035	U080	U124	U167	U214	U376	
U036	U081	U125	U168	U215	U377	
U037	U082	U126	U169	U216	U378	
U038	U083	U127	U170	U217	U379	
U039	U084	U128	U171	U218	U381	
U041	U085	U129	U172	U219	U382	
U042	U086	U130	U173	U220	U383	
U043	U087	U131	U174	U221	U384	
U044	U088	U132	U176	U222	U385	

TABLE C.2
PART B
(Cont'd)

001K	160U	042U	070U	097U	122U
002K	161U	043U	071U	098U	124U
001U	021U	044U	072U	099U	127U
002U	022U	046U	073U	100U	128U
003U	023U	164U	167U	101U	129U
004U	024U	047U	074U	102U	170U
005U	025U	048U	075U	103U	153U
006U	027U	049U	076U	104U	131U
007U	028U	050U	077U	106U	132U
157U	152U	051U	078U	168U	134U
008U	029U	052U	079U	108U	135U
009U	030U	054U	080U	169U	136U
158U	032U	055U	152U	110U	137U
011U	033U	056U	082U	111U	138U
012U	034U	165U	083U	112U	139U
013U	150U	057U	086U	113U	140U
014U	162U	058U	088U	114U	154U
147U	036U	059U	089U	115U	171U
148U	037U	166U	090U	116U	172U
159U	038U	061U	092U	117U	173U
015U	163U	063U	093U	118U	141U
016U	151U	064U	094U	119U	142U
017U	040U	065U	095U	120U	143U
020U	041U	068U	096U	121U	144U
					174U
					175U
					155U
					146U

*only defined as Other Listed Waste when found in combination with any wastes from Table C.2 (Part B).

C-1d Residuals from the Treatment Process

C-1d(i) Effluent

Treated effluent is discharged to the Detroit wastewater treatment facility in accordance with discharge permit requirements. This effluent is exempt from hazardous waste regulations under the domestic sewage exclusion in 40 CFR 261.4.

C-1d(ii) Non-Hazardous Solids

Dewatered solids from the treatment of characteristic wastes, (unless otherwise identified in C-1d(iii), e.g. corrosive TC metals, TC organics, Michigan waste codes 001D and 003D) are managed as non-hazardous solids (unless managed for relaimation) and these solids can be disposed of in a Subtitle D landfill.

Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry ((SIC) codes 331 and 332) is exempt from definition of a hazardous waste per 40 CFR 261.3(c) (2) (ii) (A) and can be disposed of as nonhazardous waste if the sludge is not characteristically hazardous.

R 299.9203(4)(a)

C-1d(iii) HAZARDOUS SOLIDS

Dewatered solids from the treatment of: waste generated from processes associated with F006 and F019; listed wastes K157, F006 and F019; and Other Listed Wastes; are managed as the appropriate listed hazardous waste.

C-1e CHEMICAL MATERIALS STORED AND USED ON-SITE

Chemical materials stored and used on-site are classified as either reused materials or reagents.

C-1e(i) REUSED MATERIALS

Certain chemical materials which are exempted solid wastes are reused as effective substitutes for commercial products at this facility or they may be reshipped to other users. These materials are stored at the facilities for use as commercial chemical product substitutes in accordance with 40 CFR 261.2. These materials are not accumulated speculatively, and generally include iron salt solutions (ferrous chloride, ferrous sulfate, ferric chloride, etc.) and other chemicals which are reused as substitutes fro commercials chemicals products, including treatment plant regeants.

C-1e (ii) REAGENTS

Other chemicals which are used for the treatment and processing of hazardous wastes are also present at the facility. They include:

sodium hydroxide solutions;
hydrate lime;
lime slurry;
potassium and/or magnesium hydroxide;
activated carbon;
ferrous / ferric chloride;
ferrous sulfate;
sodium bisulfite;
sodium hypochlorite;
potassium permanganate;
other chemical reagents which may be required.

C-2 WASTE ANALYSIS PLAN

All hazardous wastes are properly characterized prior to acceptance at Dynecol. Generators are required to provide a complete waste characterization, an appropriate chemical analysis, and a representative sample of the waste generated. This information may be verified by an inspection of the generator's facility.

A treatability study, i.e., bench testing, can be performed prior to acceptance of certain waste streams to determine any of the following: (1) whether the waste is amenable to the treatment process, (2) what pretreatment (if any) is required, (3) the optimal process conditions needed to achieve the desired treatment, (4) the efficiency of the treatment process for a specific waste or wastes, (5) the characteristics and volumes of residuals from the particular treatment process.

Dynecol screens each incoming shipment and analyzes shipment samples of wastes for "fingerprint" parameters. In the event that the screening indicates that the waste is inconsistent with the manifest or the waste characterization, the waste will be recharacterized to determine if it is acceptable. Wastes are also recharacterized periodically to ensure that they have not changed significantly.

All sampling and analytical work is done in accordance with "Test Methods of Solid Waste, Physical/Chemical Methods," 3rd Edition (U.S. EPA Office of Water and Waste Management, SW-846, 1986). Wastes will be generally characterized as follows:

- General waste identification,
- Waste description-chemical composition and physical form,
- Description of process generating waste,
- U.S EPA/MDNR waste code(s),
- DOT shipping information,
- Physical characteristics,
- Other characteristics, and
- Land disposal restrictions.

Table C.3 shows the information which is typically contained in the waste characterization file.

C-2a Parameters and Rationale [40 CFR 264.13(b)(1)]

The hazardous wastes stored and treated at Dynecol have been evaluated to determine the analytical parameters that may apply to each waste. The analytical parameters and the selection rationale for the wastes received and stored at the container management facility are provided in Appendix C.1. Table C.4 lists the hazardous wastes treated or stored at the facility, the applicable analytical parameters, and the rationale for their selection.

TABLE C.3

INFORMATION TYPICALLY RECORDED IN WASTE CHARACTERIZATION FILE

Facility Information

US EPA ID number
Company name
Address
Contact Person
Telephone

Business/Mailing/Broker Information
(if different from facility information)

Company name
Address
Contact Person
Telephone

Waste Description
Waste common name
Description of process generating waste
Waste composition
Physical characteristics or contaminants:

* Carcinogen
* Oxidizer
* Organics
* Explosives
* Phenols
* Hexavalent Chromium
* Radioactive
* Poison
* PCBs
* Pesticides
* Wastewater/Non-wastewater
* State (liquid/solid/slurry)

Waste Characterization

U.S. EPA/MDNR waste code(s)
Michigan Act 136 non-hazardous waste code(s)

Shipping Information

Waste volume
Shipment frequency
DOT shipping information

Generator Certification

Generator name
Title
Generator Signature
Date

Waste Analysis

Applicable analytical data

TABLE C.4
WASTE CHARACTERIZATION
SAMPLING AND ANALYTICAL METHODS FOR WASTES ACCEPTED
TREATMENT AND STORAGE

Parameter	Section/Method	Reference
Sampling Tanks		
COLIWASA	1.2.1.1 or equiv.*	1
Weighted bottle	1.2.1.2 or equiv.	1
Dipper	1.2.1.3 or equiv.	1
Sampling Solids		
Trier	1.2.1.5 or equiv.	1
Scoop/shovel	1.2.1.7 or equiv.	1
Toxicity Characteristic Leachate Procedure	1311	1
TC Metals		
Arsenic	6010 or equiv.	1
Barium	6010 or equiv.	1
Cadmium	6010 or equiv.	1
Chromium, total	6010 or equiv.	1
Chromium, hex.	7198 or equiv.	1
Copper	6010 or equiv.	1
Lead	6010 or equiv.	1
Mercury	7470 or equiv.	1
Selenium	6010 or equiv.	1
Silver	6010 or equiv.	1
Zinc	6010 or equiv.	1
TC Organic Compound	6010 or 7000 or equivalent	1
Benzene	8020 or 8024	1
Carbon Tetrachloride	8240	1
Chlorobenzene	8240	1
Chlordane	8250	
Chloroform	8240	1
o-Cresol	8270	1
m-Cresol	8270	1
p-Cresol	8270	1
1,4-Dichlorobenzene	8010 or 8120 or 8250	1
1,2-Dichloroethane	8240	1
1,1-Dichloroethylene	8010	1
2,4-Dinitrotoluene	8090 or 8250	1
Heptachlor	8080 or 8250	
Hexachlorobenzene	8120 or 8250	1
Hexachlorobutadiene	8120 or 8250	1
Hexachloroethane	8010 or 8240	1
Methyl Ethyl Ketone	8015	1
Nitrobenzene	8090 or 8250	1
Pentachlorophenol	8040 or 8250	1

Pyridine	8090 or 8250	1
Tetrachloroethylene	8010	1
Trichloroethylene	8010	1
2,4,5-Trichlorophenol	8040 or 8250	1
2,4,6-Trichlorophenol	8040 or 8250	1
Vinyl Chloride	8240	1

Parameter	**Section/Method**	**Reference**
Other Parameters		
Total Cyanide	9010 or equiv.	1
Sulfides	9030or equiv.	1
pH	9040 or equiv.	1
Flash Point	1010 or 1020 or equiv.	1
BOD	507 or equiv.	2
COD	508 or equiv.	2
Fat oil and grease	503 or equiv.	2
Total organic carbon	505 or equiv.	2
Total organic halogen	9020 or equiv.	1
Total PCB's	8080 or equiv.	1
Total toxic organic	824/825	3
Phenol	510 or equiv.	2
Acidity	402 or equiv.	2
Alkalinity	403 or equiv.	2
Iron	315 or equiv.	2
Nickel	6010 or equiv.	1
Thallium	7840 or equiv.	1
Total suspended solids	209 or equiv.	2

References:

1. SW-846, EPA, "Test Methods for Evaluation of Solid Wastes-Physical/Chemical Methods," 3rd Edition.
2. "Standard Methods for the Examination of Water and Wastewater," AWWA, 18th Edition.
3. EPA-600/4-79-020

* Any equivalent method proposal will be pre-approved by MDNR,

C-2b Test Methods [40 CFR 264.13(b)(2)]

Generators are responsible for providing the required waste characterization information. Appendix C-4 and Table C.4 also list the test methods that are used to analyze the appropriate parameters. Generators must use these approved methods. Any verification sampling performed by Dynecol also employs these methods.

Some waste types may not require specifc characterization by chemical analysis because the composition of the wastes can be readily determined from the process by which they are generated. For example, chemical analysis may not be required for a U078 (1,1-dichloroethylene waste) if a valid material safety data sheet is provided. In addition, a single chemical analysis may apply to waste streams generated by similar processes per 40 CFR 264.13(a)(2).

Lab packs, small containers of hazardous waste in overpacked drums, are identified by a qualified Dynecol representative during packing. Due to the volume of individual containers and wastes which make up Lab Packs, the standard Dynecol waste characterization process is not practical. While on the generator's site, the Dynecol representative verifies the constituents of the Lab Pack wastes to be packaged and obtains characterization information, including all land disposal restrictions and DOT information, through use of established and/or published data. Upon completion of the Lab Pack characterization process, a detailed inventory of each overpack drum is developed. The Dynecol representative certifies the accuracy of each Lab Pack inventory, and also ensures the following:

- Packaging the hazardous waste in non-leaking inside containers which are compatible with the wastes and are tightly and securely sealed;
- Using inside containers and overpacks that satisfy DOT hazardous materials regulations;
- Using adequate amount of compatible absorbent materials;
- Placing incompatible wastes in separate containers;
- Treating reactive wastes, other than cyanide or sulfide-bearing wastes, prior to packaging; and

- Sorting wastes into groups that can be disposed of in a similar manner.

C-2c Sampling Methods [40 CFR 264.13(b)(3)]

The sampling methods for applicable bulk and containerized wastes are described below. These methods were selected for their simplicity, ability to detect unacceptable wastes, ability to obtain a representative sample, and consistency with U.S EPA test methods. All samples collected at the facility are obtained by trained personnel. Generators are required to use these methods unless an alternate method is approved by Dynecol.

C-2c(i) Containers

For each container sampled, a single sample that represents the entire depth of the container along its axis is obtained. Equipment used for sampling containerized wastes includes weighted bottles, composite liquid waste samplers (COLIWASAs), thiefs, triers.

A COLIWASA is a glass, plastic, or metal tube with an end closure that can be opened and closed while the tube is submerged (See Figure C.1). The COLIWASA is useful for sampling free flowing liquids, slurries, and wastes that consist of several immiscible liquid phases. The COLIWASA is lowered into the waste at a rate slow enough to permit the level of liquid inside and outside the sampler to remain the same. When the sampler hits the bottom, the stopper is closed. In this manner, an obtained sample will be representative of the entire depth of the waste.

A weighted bottle consists of a glass or nonreactive plastic bottle with an attached sinker or weight, a stopper, and a line which is used to lower, raise, and open the bottle. The weighted bottle can be used to sample liquids and slurries. See Figure C.2.

A thief consists of two slotted concentric tubes usually made of stainless steel or brass or plastic (see Figure C.3). The outer tube has a conical pointed top which permits the sampler to penetrate the material being sampled. The inner tube is rotated to open and close the sampler. A thief can be used to sample dry granules or powdered wastes whose particle diameter is less than one third the width of the slots.

A trier consists of a tube cut in half lengthwise with a sharpened tip that allows the sampler to cut into sticky solids and lose soil (see Figure C.4). The trier is then rotated to cut a core of the waste. A trier can be used to sample moist and sticky solids having a particle diameter less than one half the diameter of the trier.

The above sampling methods are detailed in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 3rd Edition (U.S. EPA Office of Water and Waste Management, SW-846, 1986).

C-2c(ii) Transport Vehicles

Three random samples are collected by use of trier from the sludge transport vehicle and the samples are composited prior to analysis.

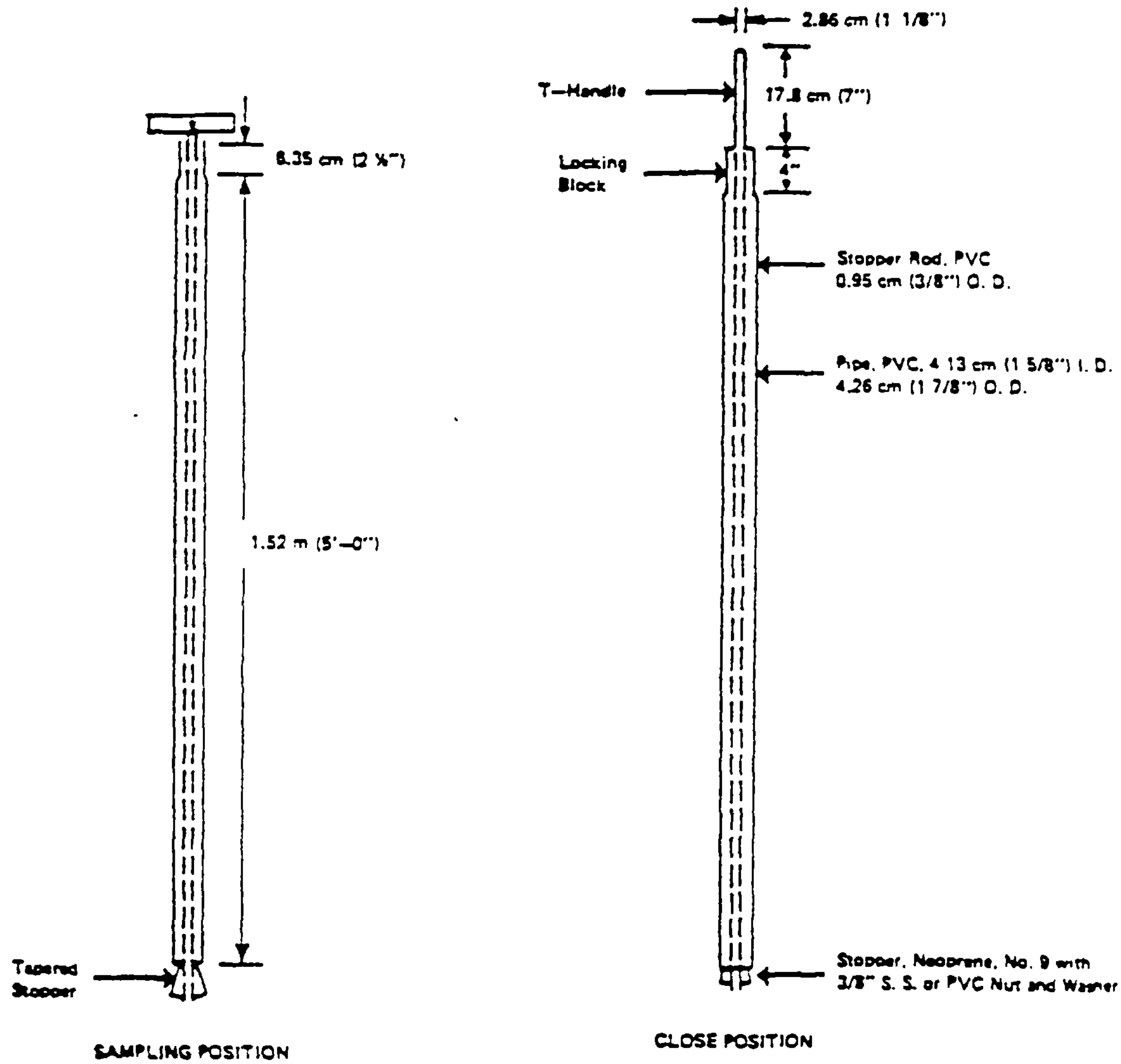


Figure C.1

Composite Liquid Waste Sampler (Coliwasa)

Dynecol

Detroit, Michigan

June, 1989 20878

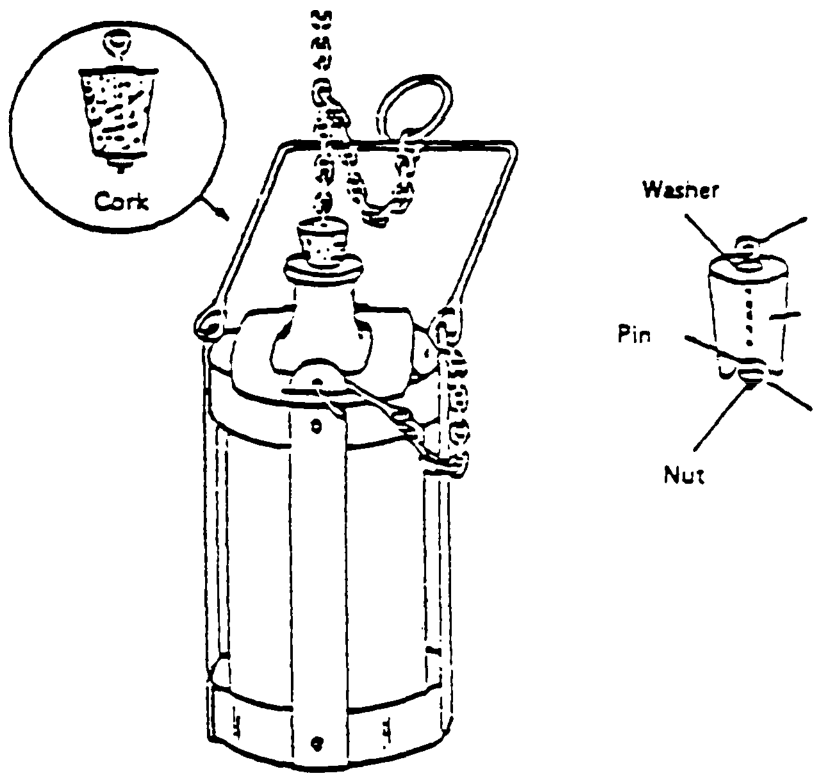


Figure C.2

Weighted Bottle Sampler

Dynecol
Detroit, Michigan

June, 1989 20878

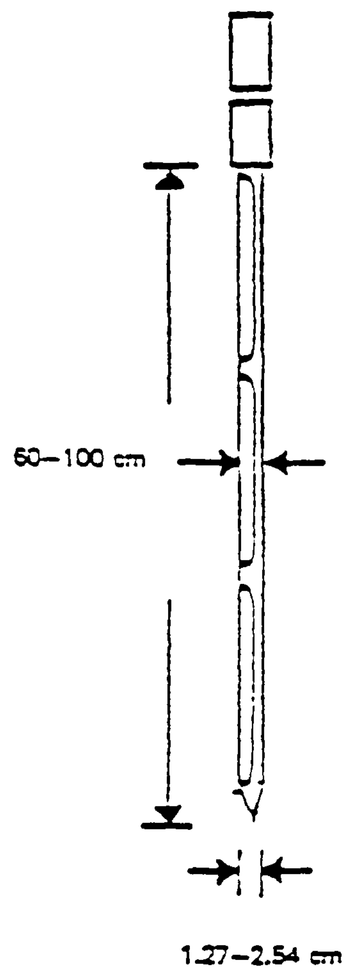


Figure C.3

Thief Sampler

Dynecol
Detroit, Michigan

June, 1989

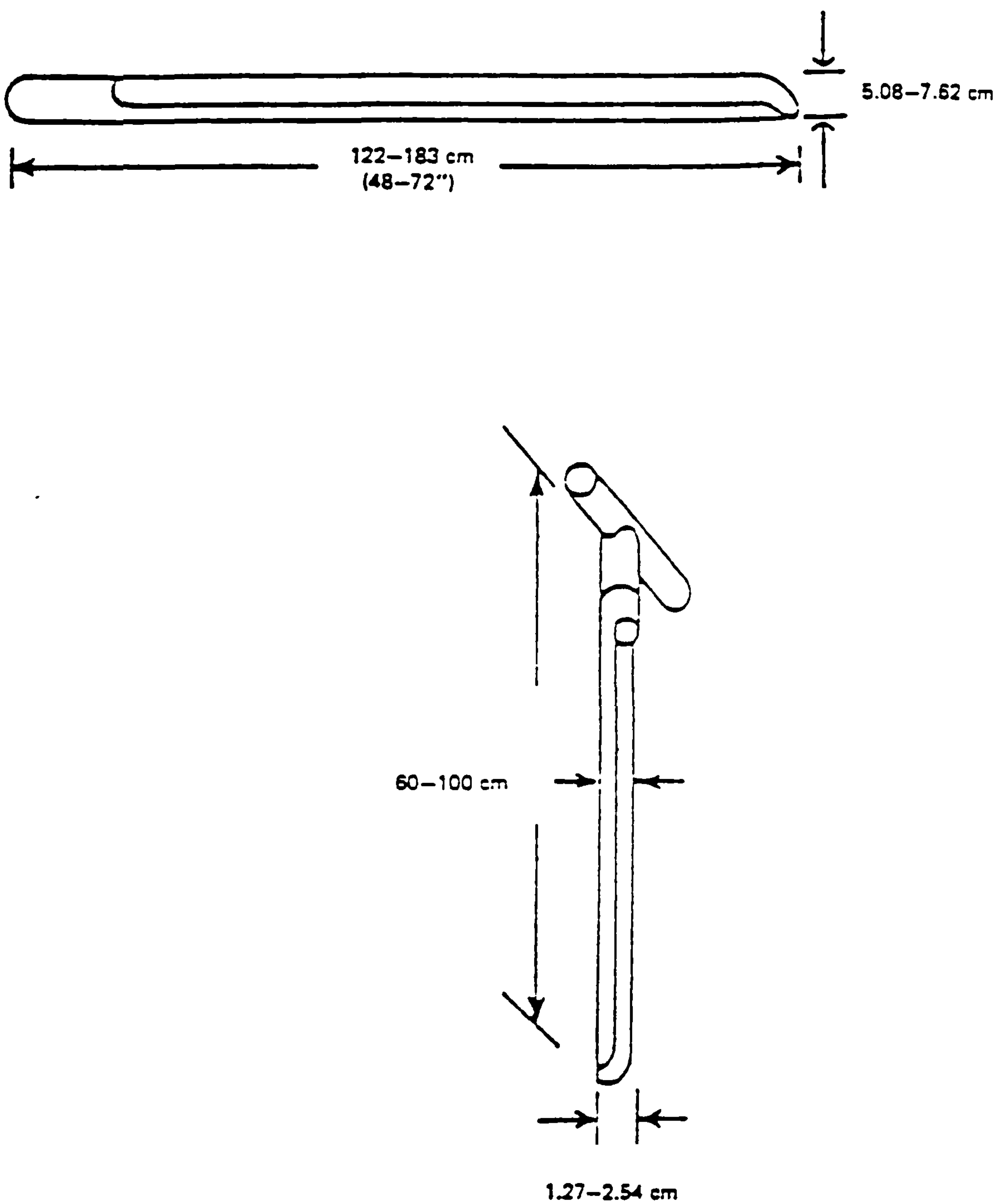


Figure C.4

Sampling Triers

Dynecol
Detroit, Michigan

June, 1989

20873

C-2c(iii) Bulk Shipments

Bulk tankers are sampled in a manner which ensures that the samples are representative. A composite liquid waste sampler (COLIWASA) can be used to sample nonhomogeneous or stratified liquid. A weighted bottle can be used for sampling homogeneous or completely mixed liquids. These methods are summarized above and described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 3rd Edition. (U.S. EPA Office of Water and Waste Management, SW-846, 1986).

C-2d Frequency of Analyses [40 CFR 264.13(b)(4)]

Dewatered solids from the treatment of certain characteristically hazardous solutions and K062 wastes are analyzed for TC toxicity metals on a periodic basis to confirm that the treatment process (lime stabilization and others) generates a non-hazardous filtercake. Dewatered solids are also tested for those TC organics received during the period for which the solid is applicable. Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC codes 331 and 332) is exempt from definition of a hazardous waste per 40 CFR 261.3(c)(2)(ii)(a) and may be disposed of as a nonhazardous waste unless it is characteristically hazardous.

Dewatered solids from the treatment of F006 and F019 wastes are tested on a periodic basis to determine if the sludge meets the treatment standards for F006 and F019 wastes (see Section C-4), or are sent to an alternate disposal facility for further treatment prior to land disposal.

Dewatered solids from the treatment of Other Listed Hazardous Wastes referenced in Table C.2, Part B, will be subject to all land ban restrictions as defined in 40 CFR 268. The solids will be evaluated prior to disposal to determine if they meet the treatment standards for the treated wastes, or are sent to an alternate disposal facility for further treatment prior to land disposal.

C-2e Additional Requirements for Wastes Received from Off-Site Generators [40 CFR 264.13]

Dynecol has developed a stringent program for evaluating wastes generated off-site. This program includes waste characterization requirements for generators, screening procedures, and waste re-characterization procedures. Generator waste characterization requirements are outlined in Section C-1. The screening and re-characterization procedures are described below.

C-2e(i) Shipment Screening [40 CFR 264.13(a)(4)]

Dynecol inspects each shipment of hazardous waste from off-site generators to determine whether it matches the identity of the waste(s) specified on the manifest and shipping document. The objectives of the screening process are to:

- Identify restricted wastes that cannot be accepted;
- Identify incompatible, ignitable, or reactive wastes;
- Ensure the matching of waste shipment identity with waste approval information;
- Ensure compliance with the facility's applicable permits; and
- Ensure the safe operation of the facility.

Shipment screening includes: (1) checking the completeness and correctness of the manifest, (2) checking the completeness of the land disposal restriction form, and (3) visually inspecting the shipment and comparing it with the manifest. The following records are accessible and readily available to all operating personnel who are responsible for inspecting and unloading incoming shipments of hazardous waste:

- A copy of the waste fingerprint report for each waste stream; and
- Dynecol's Waste Analysis Plan.

C-2e(i)(a) Completeness of manifest.

The waste shipment manifest is reviewed to ensure that it is accurate and complete. At a minimum, the following information must be on each manifest:

- a manifest document number;
- the generators' name, mailing address, and EPA ID number;
- each transporter's name and EPA ID number;

- the destination of the waste shipment, including address and EPA ID number.
- a Department of Transportation shipping name and number;
- the quantity or volume of waste in the shipment along with the appropriate waste code(s); and
- a signed, dated certification of the shipment's content.

C-2e(i)(b) Completeness of the land disposal restriction notification and certification form.

Waste shipment land disposal restriction notification and certification form, if applicable, is also checked for accuracy and completeness (copies of representative forms are included in Appendix C-5). The following information on the form is reviewed:

- manifest document number;
- applicable waste code(s);
- check mark for all subtances and their respective treatment standards applicable to the identified waste stream;
- generator's name and EPA ID number; and
- authorized signature and date.

C-2e(i)(c) Visual inspection

Each shipment is visually inspected to determine if:

- the number and type of containers and total quantity match the manifest;
- the container labels are correct;
- there are any irregulatories with the shipment (e.g., leaking, bulging, or corroding containers);

C-2e(ii) Fingerprint Screening

C-2e(ii)(a) Waste Accepted at Treatment Plant

In addition to the general waste characterization procedures outlined above, wastes which are accepted for treatment at Dynecol are subjected to fingerprint screening. Wastes are evaluated for specific waste verification parameters as described below.

Physical Appearance. A representative sample of the waste stream typically produced by the generator is kept by Dynecol. The appearance of the shipment sample, as determined by visual inspection, is compared with that of the representative sample of the material including: color, clarity, phase separation, and suspended and settled solids.

pH. pH of the shipment sample is compared to the representative sample and/or the waste characterization analysis. pH is determined by using a calibrated pH meter in accordance with Method 9040 of SW 846 or by using litmus paper sensitive to 0.5 pH units.

Other analyses. Additional waste verification parameters may be required for proper waste characterization. They include the following:

Parameter	**Criteria**	**Evaluation Method**
Organic content	no uncharacteristic phase separation	visual
Solids content	comparison to retained sample and waste approval form	visual
Pumpability	consistent with retained sample and waste approval form	visual-stir test
Reactive Cyanide*	contains less than 20 ppm	colorimetric (7.3.3.2)

* for F006 and F019 only.

C-2e(ii)(b) Wastes Accepted at the Container Management Facility

Randomly selected containers from a waste shipment are sampled to confirm waste characteristics and criteria found in Tables C.6 (Chemical Characterization Hierarchy) and C.7 (Compatibility Evaluation Procedure) of this section. The frequency of sampling is based upon the following criterion: ten percent of all containers per waste code, per generator and per shipment. Drums are selected for sampling using the random sampling methods for containers described in "Test Methods for Evaluating Solid Wastes Physical/Chemical Methods", 3rd Edition (U.S. EPA Office of Water and Waste Management, SW-846, 1986) Section 1.4.1. Simple random sampling requires the use of random numbers table and procedures presented in Table C.5.

The volume of the containers is generally 30 or 55 gallons and the contents are accessible for sampling through the opened top or bung. Since each load of similar material from a generator is considered homogeneous, representative samples can be obtained by sampling a vertical volume from a randomly selected subset of drums in the shipment. For shipment of less than 100 drums, the number of samples taken equals the square root of the number of drums in the shipment. For shipment of 100 or more drums, ten percent of the drums are sampled.

Lab-packs are always packed at the generator's facility and are packed by trained personnel using specific procedures. An inventory of all wastes put in each lab pack is made at the time of packing, and this inventory is the information that is used to screen the waste.

Table C.5
Random Numbers

03	47	43	73	86	36	96	47	36	61	46	98	63	71	62
97	74	24	67	62	42	81	14	57	20	42	53	32	37	32
16	76	62	27	66	56	50	26	71	07	32	90	79	78	53
12	56	85	99	26	96	96	68	27	31	05	03	72	93	15
55	59	56	35	64	38	54	82	46	22	31	62	43	09	90
16	22	77	94	39	49	54	43	54	82	17	37	93	23	78
84	42	17	53	31	57	24	55	06	88	77	04	74	47	67
63	01	63	78	59	16	95	55	67	19	98	10	50	71	75
33	21	12	34	29	78	64	56	07	82	52	42	07	44	38
57	60	86	32	44	09	47	27	96	54	49	17	46	09	62
18	18	07	92	46	44	17	16	58	09	79	83	86	19	62
26	62	38	97	75	84	16	07	44	99	83	11	46	32	24
23	42	40	64	74	82	97	77	77	81	07	45	32	14	08
52	36	28	19	95	50	92	26	11	97	00	56	76	31	38
37	85	94	35	12	83	39	50	08	30	42	34	07	96	88
70	29	17	12	13	40	33	20	38	26	13	89	51	03	74
56	62	18	37	35	96	83	50	87	75	97	12	25	93	47
99	49	57	22	77	88	42	95	45	72	16	64	36	16	00
16	08	15	04	72	33	27	14	34	09	45	59	34	68	49
31	16	93	32	43	50	27	89	87	19	20	15	37	00	49

HOW TO USE THE TABLE OF RANDOM NUMBERS:

1. Segregate the containers (i.e., drums) according to waste types, and generator based on available information.

2. Number the containers containing the same waste types consecutively, starting from 01.

3. Determine the number of samples required. For more than 100 containers, sample 10% of the containers. For shipments of 100 fewer containers, the number of containers to sample equals the square root of the number of containers.

4. Using the set of random numbers above, choose any number as a starting point.

5. From this number, go down the column, then to the next column to the right, or go in any predetermined direction until you have selected the appropriate number of drums to sample, with no repetitions. Larger numbers are ineligible. (For example, if you wish to sample 5 drums out of a shipment of 20, and you choose 19 as the starting point on column four, the next eligible numbers as you go down this column are 12 and 04. So far you have chosen only three eligible numbers. Proceed to the next column to the right. Going down and starting from the top of this column, the next eligible numbers are 12 and 13. But 12 is already chosen. Proceeding to the sixth column, the next eligible number is 16. Your five random numbers, therefore, are 19, 12, 04, 13 and 16. The drums with corresponding numbers should be sampled.

C-2e(iii) Waste Re-Characterization

All wastes are re-characterized after the initial waste characterization analysis as follows:

- After approximately 12 months have elapsed since the previous waste characterization analysis was performed; or

- When the facility is notified by the generator, or has reason to believe that the process generating the waste has changed and the waste composition is affected.

Wastes may also be re-characterized when a shipment fingerprint screening is inconsistent with the approved waste characteristics. If such discrepancies are noted, the generator is contacted. The waste may be rejected or reevaluated based on this contact. If there are still discrepancies following the evaluation, the generator is again contacted and the waste is re-characterized. The waste shipment is rejected by the facility if this procedure indicates that the waste cannot be safely and legally handled. The waste shipment is accepted following re-characterization if the facility can safely handle it within the constraints of the facility's permit.

C-2f Additional Requirements for Ingnitable, Reactive, or Incompatible Wastes [40 CFR 264.13(b)(6) and 40 CFR 264.17]

No ignitable or reactive wastes are accepted for treatment at Dynecol. The prevention of accidental ignition of wastes in the container management area is ensured by the following:

- Refusing explosive wastes.

- Prohibiting smoking, open flames in the container management facility and also the loading/unloading areas.

- Posting "No Smoking" signs.

- Protecting wastes from other sources of ignition such as cutting and welding, hot surfaces, frictional heat, sparks, etc.

- Advising employees of these prohibitions as part of the orientation training conducted prior to beginning employment.
- Providing fire extinguishers and sprinkler system to ensure immediate response to fires.
- Training personnel in fire response procedures to provide immediate response to fires.
- Using spark-proof equipment.

Potentially reactive or incompatible wastes are carefully managed to avoid accidental adverse reactions. The design of the container management facility allows reactive and incompatible wastes to be properly segregated and contained.

C-3 Quality Assurance/Quality Control

The determination of waste characteristics for inbound and outbound hazardous waste shipments is subjected to a Quality Assurance/Quality Control program.

C-3a Program Goals

The goal of this Quality Assurance/Quality Control program is to provide accurate and precised data on the physical and chemical properties of wastes so that the wastes are handled safely, treated effectively, and the facility is operated in full compliance with its permits. This is accomplished by ensuring that:

- The wastes are properly identified and characterized.
- Wastes which do not meet Dynecol's criteria are not accepted.

The Quality Assurance/Quality Control program adopted by a typical laboratory (or equivalent) used by Dynecol is provided in Appendix L.4.

C-3b Sampling Program

Designated personnel are trained to sample waste shipments. Section H of this license application contains information on the training program.

Sampling of waste shipments are performed in accordance with methods in "Test Methods for Evaluating Solid Wastes, Physical/ Chemical Methods," (U.S. EPA Office of Water and Waste Management, SW-846, 1986).

C-3c Fingerprint Screening Program

Fingerprint screening of incoming waste shipments is performed by trained Dynecol personnel to ensure that the waste matches the specific waste verification parameters as described in the waste fingerprint report.

C-3d Analysis Program

The waste characterization testings may be performed at the company's laboratory, an outside laboratory (equivalent to the one described in Appendix L.4), or both depending on such factors as workload, matrix considerations, etc. All testings are performed in accordance with methods detailed in SW-846, 1986, Third Edition.

C-3e Data Evaluation

Analytical data are evaluated as part of the screening and acceptance procedures for waste shipments. The data are compared to screening tests of previous shipment(s) of the waste stream, other samples of the same shipment, and to waste characterization data. Any discrepancies that cannot be attributed to normal sampling or laboratory variation will be investigated further.

C-3f References

Hatayama, H.K., J.J. Chen, E.R. de Vera, R.D. Stephens, and P.L. Storm. 1980. A Method for Determining the Compatibility of Hazardous Wastes. EPA-600/2-80-076. U.S. Environmental Protection Agency. Cincinnati, Ohio.

U.S. Environmental Protection Agency. "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." U.S. EPA Office of Water and Waste Management, SW-846, 1986.

U.S. EPA. 1984. Waste Analysis Plan. A Guidance Manual. EPA/530-SW-84-012. Office of Solid Waste.

C-4 LAND DISPOSAL RESTRICTIONS [40 CFR 268]

C-4a Restricted Wastes Treated at the Waste Treatment Facility

All restricted waste streams which are treated at or generated by Dynecol and are subject to land disposal restrictions (LDR) will be handled in accordance with provisions of 40 CFR 268.

C-4a(i) Applicable Treatment Standards

The effluents from the treatment of regulated wastes are not subject to land disposal restrictions because the treated effluent is discharged to the Detroit wastewater treatment plant in accordance with the domestic sewage exclusion of 40 CFR 261.4.

The sludges generated from the treatment of regulated wastes may be subject to land disposal restrictions. The treatment standards for these wastes are defined in subpart D of 40 CFR 268. The disposal of these sludges will be in accordance with all provisions of 40 CFR 268.

C-4(a)(ii) Waste Analysis Requirements

The F006 and F019 sludges are analyzed on a periodic basis to determine if they meet the treatment standards as defined in 40 CFR Part 268, or are sent to an alternate disposal facility for further treatment prior to land disposal. No treatment standards have been established for the newly listed waste K157 at the time of submittal of this permit reapplication package.

Sludges from the treatment of Other Listed Hazardous Wastes (see Table C.2 Part B) are subject to all land ban restrictions as defined in 40 CFR 268, will be analyzed periodically to determine if they meet the treatment standards as defined in 40 CFR Part 268, or are sent to an alternate disposal facility for further treatment prior to land disposal.

C-4(a)(iii) Certification Requirements

Certifications for all restricted wastes treated or generated by Dynecol will be done in accordance with requirements and restrictions of 40 CFR 268 and Michigan Act 64 R 299.9311.

C-4(a)(iv) Storage Requirements

The influent wastes and treatment residuals are stored solely for the purpose of the accumulation of such quantities of hazardous wastes as necessary to facilitate proper treatment and/or disposal. These wastes are not stored for more than one year. Treatment residuals are typically disposed of in less than 90 days.

C-4(a)(v) Waste Analysis and Recordkeeping [40 CFR 268.7]

Dynecol maintains a copy of all notices, certifications, waste analysis data, and any other applicable documentation for treatment residues which are sent to off-site TSD facilities. These files are kept for a minimum of five years.

C-4(a)(vi) Manifests

Any treatment facility which is to receive the wastes subject to land disposal restrictions is notified in writing of the treatment standards for each shipment. Copies of notice which are provided in Appendix C-4, typically include the following:

- the EPA hazardous waste number;
- the corresponding treatment standard; and
- the manifest number.

C-4b Restricted Wastes Stored in the Container Management Facility

The container management facility serves as a storage facility for containerized wastes from off-site generators. As such, Dynecol accepts a wide variety of listed and characteristically hazardous wastes for temporary storage. Refer to Appendix C for list of acceptable waste codes.

C-4b(i) Applicable Treatment Standards

All treatment standards for containerized wastes stored in the container management facility are codified in 40 CFR 268 Subpart D. The generator is responsible for providing a notice which lists the appropriate treatment standards for each waste shipment.

C-4b(ii) Waste Analysis Requirements and Recordkeeping

Proper waste characterization and notification pursuant to the requirements and restrictions of 40 CFR 268.7 is the responsibility of the generator. Dynecol maintains a copy of the notice and the waste analysis data required under 40 CFR 268.7 in the operating record. This file will be kept for a minimum of five years.

C-4b(iii) Storage Requirements

The containerized wastes are stored solely for the purpose of the accumulation of such quantities of hazardous wastes as necessary for treatment or disposal. These wastes are not stored for more than one year. All containers are clearly identified and labeled with storage start dates.

C-4b(iv) Certification Requirements

Certifications for all restricted wastes that are shipped from the Dynecol container management facility to off-site TSD facilities are done in accordance with requirements and restrictions of 40 CFR 268 and Michigan Act 64 R. 299.9311.

C-5 COMPATIBILITY EVALUATION PROCEDURE FOR CONTAINER MANAGEMENT FACILITY

Many containerized wastes which may be potentially stored at Dynecol are considered incompatible and must be properly segregated even during short-term storage to minimize or eliminate the potential for release of toxic gases, explosion, or fire. Dynecol adheres to the segregation scheme as described in section C-5(a) to maintain proper segregation of containerized wastes stored in the container management facility.

Since the waste characteristics must be fully defined prior to acceptance of a waste, Dynecol's "Waste Approval Form" which is completed by the generator is the primary source of waste characterization information. Table C.6 summarizes the chemical labeling hierarchy that is used by Dynecol for waste identification.

C-5(a) Segregation Scheme

Wastes are stored according to the following scheme:

1. Cyanide wastes are defined as those wastes containing greater than 250 ppm reactive cyanide and are stored in a separate bay labeled "Poison." Acid-bearing wastes are not stored adjacent to the cyanide bay.

2. Wastes that are characterized as oxidizers per 49 CFR 172.101 are considered to be oxidizing wastes and will be stored in a bay labeled "Oxidizer."

3. Wastes with a pH less than or equal to two will be stored in a bay labeled "Corrosive Acid." Wastes having a pH of 12.5 or higher are stored in bay labeled as "Corrosive Base."

4. Flammable wastes are defined as wastes with flash point less than 100 degrees F. All flammable wastes are stored in a bay labeled "Flammable Waste."

5. All wastes which exhibit reactive characteristics with water are stored in a bay labeled "Dangerous When Wet".

6. All other hazardous wastes which are not identified above are stored in a bay labeled "Hazardous Waste".

Several different waste types may be stored in the same bay based on the Compatibility Matrix (see Table C.7). When more than one waste type is stored within the same bay, placards/signs indicating each waste type will be posted. In addition, for ease of managing and checking storage within bays, different waste types will always be separated by row, i.e., different waste types will not be mixed within a row.

TABLE C.6
CHEMICAL LABELING HIERARCHY

Waste Description	PCB	Cyanide	Oxidizer	pH	Flash Point	Water Reactive	Hazard Label***
Radioactive~	*	*	*	*	*	*	Reject
Dioxins~	*	*	*	*	*	*	Reject
Explosive~	*	*	*	*	*	*	Reject
PCB	>/= 50ppm	*	*	*	*	*	Reject
Cyanide	< 50 ppm	>/= 250 ppm	*	*	*	*	Poison
Oxidizer	< 50 ppm	< 250 ppm	**	*	*	*	Oxidizer
Corrosive Acid	< 50 ppm	< 250 ppm	No	0-2	*	*	Corrosive Acid
Corrosive Base	< 50 ppm	< 250 ppm	No	12.5-14	*	*	Corrosive Base
Flammable	< 50 ppm	< 250 ppm	No	>2 & < 12.5	</= 100 deg F	*	Flammable
Water Reactive	< 50 ppm	< 250 ppm	No	>2 & < 12.5	> 100 deg F	Yes	Dangerous When Wet
Hazardous waste other than those identified above	< 50 ppm	< 250 ppm	No	>2 & < 12.5	> 100 deg F	No	Hazardous Waste
Lab Packs (Non-oxidizer)	< 50ppm	*	No	>2 & < 12.5	> 100 deg F	No	Dangerous Waste

* Result irrelevant: prior category has greater importance
** As listed in 49 CFR 172.101
*** In addition to RCRA labeling requirement
~ Based on generator's knowledge
>/= denotes "greater than or equal to"
</= denotes "less than or equal to"
> denotes "greater than"
< denotes "less than"

TABLE C.7
COMPATIBILITY MATRIX FOR
WASTE STORAGE WITHIN BAYS*

Waste Characteristic	Cyanide Wastes	Oxidizers	Corrosive Acids	Corrosive Bases	Flammables	Water Reactives	Hazardous Wastes
Cyanide Wastes	C	X	X	C	X	X	C
Oxidizers	X	C	O	O	C"	C	C
Corrosive Acids	X	O	C	X	C'	O	C
Corrosive Bases	C	O	X	C	C'	O	C
Flammables	X	C"	C'	C'	C	C	C
Water Reactives	X	C	O	O	C	C	X
Hazardous Wastes (not identified above)	C	C	C	C	C	X	C
Dangerous(non-oxidizer)**	C	X	C	C	C	C	C

C = COMPATIBLE
C' = COMPATIBLE WITH FLAMMABLE LIQUIDS
FOR FLAMMABLE SOLIDS, MUST BE SEPARATED BY A DISTANCE OF 4 FT IN ALL DIRECTIONS
C" = COMPATIBLE WITH FLAMMABLE SOLIDS
FOR FLAMMABLE LIQUIDS, MUST BE SEPARATED BY A DISTANCE OF 4 FT IN ALL DIRECTIONS
O = MUST BE SEPARATED BY A DISTANCE OF 4 FT IN ALL DIRECTIONS
X = INCOMPATIBLE

* Used as general guidelines only. For more specific amplifications/limitations, refer to HM 181

** Compatible during transportation

APPENDIX C.1

ACCEPTABLE HAZARDOUS WASTE TYPES-CONTAINER MANAGEMENT FACILITY

For detailed description of a particular waste code accepted at the Container Management Facility, refer to Attachment A.

R 299.9217 Table 201a.
Rule 217. Table 201a reads as follows:

Table 201a			
EPA Hazardous Waste Number	Chemical Abstract Services Number	Material	Extract Concentration milligrams per liter
D004	7440-38-2	Arsenic	5.0
D005	7440-39-3	Barium	100.0
D018	71-43-2	Benzene	0.5
D006	7440-43-9	Cadmium	1.0
D019	56-23-5	Carbon tetrachloride	0.5
D020	57-74-9	Chlordane	0.03
D021	108-90-7	Chlorobenzene	100.0
D022	67-66-3	Chloroform	6.0
D007	7440-47-3	Chromium	5.0
D023	95-48-7	o-Cresol	200.0**
D024	108-39-4	m-Cresol	200.0**
D025	106-44-5	p-Cresol	200.0**
D026	---------	Cresol	200.0**
D016	94-75-7	2,4-D (2,4-Dichlorophenoxyacetic Acid)	10.0
D027	106-46-7	1,4-Dichlorobenzene	7.5
D028	107-06-2	1,2-Dichloroethane	0.5
D029	75-35-4	1,1-Dichloroethylene	0.7
D030	121-14-2	2,4-Dinitrotoluene	0.13*
D012	72-20-8	Endrin (1,2,3,4,10,10-hexachloro-1,7-Epoxy-1,4,4a,5,6,7,8,8a octahydro-1,4-endo, endo-5,8-dimenthano naphthalene)	0.02

D031	76-44-8	Heptachlor (and its Epoxide)	0.008
D032	118-74-1	Hexachlorobenzene	0.13*
D033	87-68-3	Hexachlorobutadiene	0.5
D034	67-72-1	Hexachloroethane	3.0
D008	7439-92-1	Lead	5.0
D013	58-89-9	Lindane (1,2,3,4,5,6-hexa-chlorocyclo-hexane, gamma isomer)	0.4
D009	7439-97-6	Mercury	0.2
D014	72-43-5	Methoxychlor (1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane)	10.0
D035	78-93-3	Methyl ethyl ketone	200.0
D036	98-95-3	Nitrobenzene	2.0
D037	87-86-5	Pentachlorophenol	100.0
D038	110-86-1	Pyridine	5.0*
D010	7782-49-2	Selenium	1.0
D011	7440-22-4	Silver	5.0
D039	127-18-4	Tetrachloroethylene	0.7
D015	8001-35-2	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine)	0.5
D040	79-01-6	Trichloroethylene	0.5
D041	95-95-4	2,4,5-Trichlorophenol	400.0
D042	88-06-2	2,4,6-Trichlorophenol	2.0
D017	93-72-1	2,4,5 TP Silvex (2,4,5-Tri-chlorophenoxypropionic acid)	1.0
D043	75-01-4	Vinyl chloride	0.2

* Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

**IF o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. the regulatory level of total cresol is 200 mg/l.

R 299.9218 Table 201b.

Rule 218. Table 201b reads as follows:

Table 201b			
Michigan Hazardous Waste Number	U.S. EPA Hazardous Waste Number	Material	Extract Concentration (milligrams per liter)
001D		Copper	100
003D		Zinc	500.0

R 299.9219 Table 202.
Rule 219. Table 202 reads as follows:

Table 202	
Michigan Hazardous Waste Number	Substance
001S	Aflatoxin
002S	2,3,7,8-Tetrachlorodibenzo-p-dioxin
003S	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
004S	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
005S	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
006S	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
007S	2,3,7,8-Tetrachloridibenzo furan

R 299.9220 Table 203a.
Rule 220. Table 203a reads as follows:

Table 203a		
EPA Hazardous Waste Number	Hazardous Waste From Nonspecific Sources	Hazard Code
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures and blends used in degreasing containing, before use, a total of 10% or more, by volume, of 1 or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane and 1,1,2-trichloroethane; all spent solvent mixtures and blends containing, before use, a total of 10% or more, by volume, of 1 or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)

F003	The following spent nonhalogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures and blends containing, before use, only the above spent nonhalogenated solvents; and all spent solvent mixtures or blends, containing before use, 1 or more of the above nonhalogenated solvents, and a total of 10% or more, by volume, of 1 or more of those solvents listed in F001, F002, F004, and F005 and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I)
F004	The following spent nonhalogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures and blends containing, before use, a total of 10% or more, by volume, of 1 or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures and blends containing, before use, a total of 10% or more, by volume, of 1 or more of the above nonhalogenated solvents or those solvents listed in F001, F002 and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I,T)

F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating used on a segregated basis on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel (5) cleaning or stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations	(R,T)
F008	Plating sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process	(R,T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat-treating operations	(R,T)
F012	Quenching wastewater treatment sludges from metal heat-treating operations where cyanides are used in the process	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process	(T)

F020	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process, of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)
F021	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tetra-, penta-, or hexachlorobenzenes under alkaline conditions	(H)
F023	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tri- and tetrachlorophenols. This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5- trichlorophenol	(H)

F024	Process wastes, including, but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from 1 to and including 5, with varying amounts and positions of chlorine substitutions. This listing does not include wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in the provisions of R 299.9213(a) or R 299.9214(a)	(T)
F025	Condensed light ends, spent filters and filter acids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from 1 to and including 5, with varying amounts and positions of chlorine substitution	(T)
F026	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tetra-, penta-, or hexachlorobenzene under alkaline conditions	(H)
F027	Discarded unused formulations containing tri- tetra-, or pentachlorophenol or discarded unused formulation containing compounds derived from these chlorophenols. This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA hazardous waste numbers F020, F021, F022, F023, F026, and F027	(T)

F032	Wastewaters, except for those that have not come into contact with process contaminants; process residuals; preservative drippage; and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations, except potentially cross-contaminated wastes that have had the F032 hazardous waste number deleted in accordance with the provisions of 40 C.F.R. §261.35 or potentially cross-contaminated wastes that are otherwise currently regulated as F034 or F035, and where the generator does not resume or initiate the use of chlorophenolic formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote or pentachlorophenol, or both.	(T)
F034	Wastewaters, except for those that have not come into contact with process contaminants; process residuals; preservative drippage; and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote or pentachlorophenol, or both.	(T)
F035	Wastewaters, except for those that have not come into contact with process contaminants; process residuals; preservative drippage; and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote or pentachlorophenol, or both.	(T)

F037	Petroleum refinery primary oil/water/solids (oil and/or water and/or solids) separation sludge- any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in oil/water/solids separators, tanks and impoundments, ditches and other conveyances, sumps, and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow; sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters; sludges generated in aggressive biological treatment units as defined in R 299.9213(4), including sludges generated in 1 or more additional units after wastewaters have been treated in aggressive biological treatment units; and K051 wastes are not included in this listing.	(T)

F038	Petroleum refinery secondary (emulsified) oil/water/solids (oil and/or water and/or solids) separation sludge- any sludge or float generated from the physical or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in induced air flotation (IAF) units and tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow; sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters; sludges and floats generated in aggressive biological treatment units as defined in R 299.9213(4), including sludges and floats generated in 1 or more additional units after wastewaters have been treated in aggressive biological treatment units; and F037, K048, and K051 wastes are not included in this listing.	(T)
F039	Leachate resulting from the treatment, storage, or disposal of wastes classified by more than 1 hazardous waste number pursuant to the provisions of R 299.9213 and R 299.9214 or from a mixture of wastes classified pursuant to the provisions of R 299.9213 and R 299.9214. Leachate resulting from the management of 1 or more of the following hazardous wastes, and no other hazardous wastes, retains its original hazardous waste number or numbers: F020, F021, F022, F023, F026, F027, or F028.	(T)

R 299.9221 Table 203b.

Rule 221. Table 203b reads as follows:

Table 203b	
Michigan Hazardous Waste Number	Hazardous Waste From Nonspecific Sources
	None

R 299.9222 Table 204a.
Rule 222. Table 204a reads as follows:

Table 204a

Industry	EPA Hazardous Waste Number	Hazardous Waste From Specific Sources	Hazard Code
Wood Preservation	K001	Bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote or pentachlorophenol, or both of these compounds	(T)
Inorganic Pigments	K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
	K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
	K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
	K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
	K006	Wastewater treatment sludge from the production of chrome oxide green pigments, anhydrous and hydrated forms	(T)
	K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
	K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic Chemicals	K009	Distillation bottoms from the production of chemicals acetaldehyde from ethylene	(T)
	K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)

K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R,T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R,T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends or still bottoms from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol or acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)

K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production	(R,T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene or aniline production	(T)

K085	Distillation of fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(C,T)
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(I,T)
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)

	K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
	K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
	K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	(T)
	K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	(T)
	K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
	K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
Inorganic Chemicals	K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)
	K073	Chlorinated hydrocarbon wastes from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)
	K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)

Pesticides	K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
	K032	Wastewater treatment sludge from the production of chlordane	(T)
	K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
	K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
	K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)
	K035	Wastewater treatment sludges generated in the production of creosote	(T)
	K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
	K037	Wastewater treatment sludges from the production of disulfoton	(T)
	K038	Wastewater from the washing and stripping of phorate production	(T)
	K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)
	K040	Wastewater treatment sludge from the production of phorate	(T)
	K041	Wastewater treatment sludge from the production of toxaphene	(T)
	K098	Untreated process wastewater from the production of toxaphene	(T)

	K042	Heavy ends of distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
	K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
	K099	Untreated wastewater from the production of 2,4-D	(T)
	K123	Process wastewater, including supernates, filtrates, and washwaters, from the production of ethylenebisdithiocarbamic acid and its salt	(T)
	K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salt	(C,T)
	K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salt	(T)
	K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts	(T)
	K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide	(C,T)
	K132	Spent absorbent and wastewater separator solids from the production of methyl bromide	(T)
Explosives	K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
	K045	Spent carbon from the treatment of wastewater containing explosives	(R)

	K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds	(T)
	K047	Pink or red water from TNT operations	(R)
Petroleum Refining	K048	Dissolved air floatation, DAF, float from the petroleum refining industry	(T)
	K049	Slop oil emulsion solids from the petroleum refining industry	(T)
	K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
	K051	API separator sludge from the petroleum refining industry	(T)
	K052	Tank bottoms, leaded, from the petroleum refining industry	(T)
Iron and Steel	K061	Emission control dust or sludge from the primary production of steel in electric furnaces	(T)
	K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry	(C,T)
Primary Copper	K064	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production	(T)
Primary Lead	K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)
Primary Zinc	K066	Sludge from treatment of process wastewater or acid plant blowdown from primary zinc production, or both	(T)

Primary Aluminum	K088	Spent potliners from primary aluminum reduction	(T)
Ferroalloys	K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)
	K091	Emission control dust or sludge from ferrochromium production	(T)
Secondary Lead	K069	Emission control dust or sludge from secondary lead smelting	(T)
	K100	Waste leaching solution from acid leaching of emission control dust sludge from secondary lead smelting	(T)
Veterinary Pharmaceu-ticals	K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
	K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
	K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
Ink Formulation	K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	(T)
Coking	K060	Ammonia still lime sludge from coking operations	(T)

	K087	Decanter tank tar sludge from coking operations	(T)

R 299.9223 Table 204b.

Rule 223. Table 204b reads as follows:

Table 204b		
Michigan Hazardous Waste Number	Hazardous Waste From Specific Sources	Hazard Code
001K	Residues, including emission control sludges, from the production process and packaging of 4,4'-Methylenebis (2-chloroaniline)	(T)
002K	Wash acids generated after the effective date of these rules from the production of 3,3'-Dichlorobenzidine and still bottoms from the recovery of these acids, excluding wash acids that are recycled or any materials that are reclaimed from the wash acids and used beneficially	(T)

R 299.9224 Table 205a.
Rule 224. Table 205a reads as follows:

Table 205a			
EPA Hazardous Waste Number	Chemical Abstract Services Number	Substance	Hazard Code
P023	107-20-0	Acetaldehyde, chloro-	
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-	
P057	640-19-7	Acetamide, 2-fluoro-	
P058	62-74-8	Acetic acid, fluoro-, sodium salt	
P002	591-08-2	1-Acetyl-2-thiourea	
P003	107-02-8	Acrolein	
P070	116-06-3	Aldicarb	
P004	309-00-2	Aldrin	
P005	107-18-6	Allyl alcohol	
P006	20859-73-8	Aluminum phosphide	(R,T,)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol	
P008	504-24-5	4-Aminopyridine	
P009	131-74-8	Ammonium picrate	(R)
P119	7803-55-6	Ammonium vanadate	
P099	506-61-6	Argentate (1-), bis(cyano-C)-, potassium	
P010	7778-39-4	Arsenic acid	
P012	1327-53-3	Arsenic (III) oxide	
P011	1303-28-2	Arsenic (V) oxide	
P011	1303-28-2	Arsenic pentoxide	
P012	1327-53-3	Arsenic trioxide	
P038	692-42-2	Arsine, diethyl-	

P036	696-28-6	Arsonous dichloride, phenyl-	
P054	151-56-4	Aziridine	
P067	75-55-8	Aziridine, 2-methyl-	
P013	542-62-1	Barium cyanide	
P024	106-47-8	Benzenamine, 4-chloro-	
P077	100-01-6	Benzenamine, 4-nitro-	
P028	100-44-7	Benzene, (chloromethyl)-	
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-	(R)
P046	122-09-2	Benzeneethanamine, alpha, alpha-dimethyl-	
P014	108-98-5	Benzenethiol	
P001	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%	
P028	100-44-7	Benzyl chloride	
P015	7440-41-7	Beryllium dust	
P017	598-31-2	Bromoacetone	
P018	357-57-3	Brucine	
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[(methylamino) carbonyl] oxime	
P021	592-01-8	Calcium cyanide	
P021	592-01-8	Calcium cyanide Ca(CN)2	
P022	75-15-0	Carbon disulfide	
P095	75-44-5	Carbonyl chloride	
P023	107-20-0	Chloroacetaldehyde	
P024	106-47-8	p-Chloroaniline	
P026	5344-82-1	1-(o-Chlorophenyl)thiourea	

P027	542-76-7	3-Chloropropionitrile	
P029	544-92-3	Copper cyanide	
P029	544-92-3	Copper cyanide Cu(CN)	
P030	--------	Cyanides (soluble cyanide salts), not elsewhere specified	
P031	460-19-5	Cyanogen	
P033	506-77-4	Cyanogen chloride	
P033	506-77-4	Cyanogen chloride (CN)Cl	
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol	
P016	542-88-1	Dichloromethyl ether	
P036	696-28-6	Dichlorophenylarsine	
P037	60-57-1	Dieldrin	
P038	692-42-2	Diethylarsine	
P041	311-45-5	Diethyl-p-nitrophenyl phosphate	
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate	
P043	55-91-4	Diisopropyl fluorophosphate	
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta, 5alpha,8alpha,8abeta)-	
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta, 5beta,8beta,8abeta)-	

P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-	
P051	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha, 2beta,2abeta,3alpha, 6alpha,6abeta,7beta, 7aalpha)-, & metabolites	
P044	60-51-5	Dimethoate	
P046	122-09-8	alpha,alpha-Dimethylphenethylamine	
P047	534-52-1	4,6-Dinitro-o-cresol and salts	
P048	51-28-5	2,4-Dinitrophenol	
P020	88-85-7	Dinoseb	
P085	152-18-9	Diphosphoramide, octamethyl-	
P111	107-49-3	Diphosphoric acid, tetraethyl ester	
P039	298-04-4	Disulfoton	
P049	541-53-7	2,4-Dithiobiuret	
P050	115-29-7	Endosulfan	
P088	145-73-7	Endothall	
P051	72-20-8	Endrin	
P051	72-20-8	Endrin, & metabolites	
P042	51-43-4	Epinephrine	
P031	460-19-5	Ethanedinitrile	

P066	16752-77-5	Ethanimidothioic acid, N-[[(methylamine)carbonyl] oxyl]-, methyl ester	
P101	107-12-0	Ethyl cyanide	
P054	151-58-4	Ethyleneimine	
P097	52-85-7	Famphur	
P056	7782-41-4	Fluorine	
P057	640-19-7	Fluoroacetamide	
P058	62-74-8	Fluoroacetic acid, sodium salt	
P065	628-86-4	Fulminic acid, mercury (II) salt	(R,T)
P059	76-44-8	Heptachlor	
P062	757-58-4	Hexaethyl tetraphosphate	
P116	79-19-6	Hydrazinecarbothioamide	
P068	60-34-4	Hydrazine, methyl-	
P063	74-90-8	Hydrocyanic acid	
P063	74-90-8	Hydrogen cyanide	
P096	7803-51-2	Hydrogen phosphide	
P060	465-73-6	Isodrin	
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-	
P092	62-38-4	Mercury, (acetato-O)phenyl-	
P065	628-86-4	Mercury fulminate	(R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-	
P064	624-83-9	Methane, isocyanato-	
P016	542-88-1	Methane, oxybis(chloro-	
P112	509-14-8	Methane, tetranitro-	(R)
P118	75-70-7	Methanethiol, trichloro-	

P050	115-20-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide	
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	
P066	16752-77-5	Methomyl	
P068	60-34-4	Methyl hydrazine	
P064	624-83-9	Methyl isocyanate	
P069	75-86-5	2-Methyllactonitrile	
P071	298-00-0	Methyl parathion	
P072	86-88-4	alpha-Naphthylthiourea	
P073	13463-39-3	Nickel carbonyl	
P073	13463-39-3	Nickel carbonyl $Ni(CO)_4$, (T-4)-	
P074	557-19-7	Nickel cyanide	
P074	557-19-7	Nickel (II) cyanide	
P075	54-11-5	Nicotine and salts	
P076	10102-43-9	Nitric oxide	
P077	100-01-6	p-Nitroaniline	
P078	10102-44-0	Nitrogen dioxide	
P076	10102-43-9	Nitrogen (II) oxide	
P078	10102-44-0	Nitrogen (IV) oxide	
P081	55-63-0	Nitroglycerine	(R)
P082	62-75-9	N-Nitrosodimethylamine	
P084	4549-40-0	N-Nitrosomethylvinylamine	
P085	152-16-9	Octamethylpyrophosphoramide	
P087	20816-12-0	Osmium oxide	
P087	20816-12-0	Osmium tetroxide	
P088	145-73-3	7-Oxabicyclo [2.2.1] heptane-2,3-dicarboxylic acid	

P089	56-38-2	Parathion	
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-	
P048	51-28-5	Phenol, 2,4-dinitro-	
P047	534-52-1	Phenol, 2-methyl-4,6-dinitro- and salts	
P020	88-85-7	Phenol, 2,4-dinitro-6-(1-methylpropyl)-	
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt	(R)
P092	62-38-4	Phenylmercuric acetate	
P093	103-85-5	N-Phenylthiourea	
P094	298-02-2	Phorate	
P095	75-44-5	Phosgene	
P096	783-51-2	Phosphine	
P041	311-45-5	Phosphoric acid, diethyl p-nitrophenyl ester	
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester	
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio) methyl] ester	
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-O[2-(methylamino)-2-oxoethyl] ester	
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl)ester	
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	
P097	52-85-7	Phosphorothioic acid, O,O-dimethyl O-[p-((dimethylamino) sulfonyl)phenyl] ester	

P071	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	
P110	78-00-2	Plumbane, tetraethyl-	
P098	151-50-8	Potassium cyanide	
P098	151-50-8	Potassium cyanide K(CN)	
P099	506-61-6	Potassium silver cyanide	
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl] oxime	
P101	107-12-0	Propanenitrile	
P027	542-76-7	Propanenitrile, 3-chloro-	
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-	
P081	55-63-0	1,2,3-Propanetriol, trinitrate-	(R)
P017	596-31-2	2-Propanone, 1-bromo-	
P102	107-19-7	Propargyl alcohol	
P003	107-02-8	2-Propenal	
P005	107-18-6	2-Propen-1-ol	
P067	75-55-8	1,2-Propylenimine	
P102	107-19-7	2-Propyn-1-ol	
P008	504-24-5	4-Pyridinamine	
P075	54-11-5	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts	
P114	12039-52-0	Selenious acid, dithallium(1+) salt	
P103	630-10-4	Selenourea	
P104	506-64-9	Silver cyanide	
P104	506-64-9	Silver cyanide Ag(CN)	
P105	26628-22-8	Sodium azide	
P106	143-33-9	Sodium cyanide	
P106	143-33-9	Sodium cyanide Na(CN)	

P108	57-24-9	Strychnidin-10-one, and salts	
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-	
P108	57-24-9	Strychnine and salts	
P115	7446-18-6	Sulfuric acid, thallium (I) salt	
P109	3689-24-5	Tetraethyldithiopyrophosph ate	
P110	78-00-2	Tetraethyl lead	
P111	107-49-3	Tetraethylpyrophosphate	
P112	509-14-8	Tetranitromethane	(R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester	
P113	1314-32-5	Thallic oxide	
P113	1314-32-5	Thallium (III) oxide	
P114	12039-52-0	Thallium (I) selenide	
P115	7446-18-6	Thallium (I) sulfate	
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester	
P045	39196-18-4	Thiofanox	
P049	541-53-7	Thioimidodicarbonic diamide	
P014	108-98-5	Thiophenol	
P116	79-19-6	Thiosemicarbazide	
P026	5344-82-1	Thiourea, (2-chlorophenyl)-	
P072	86-88-4	Thiourea, 1-naphthalenyl-	
P093	103-85-5	Thiourea, phenyl-	
P123	8001-35-2	Toxaphene	
P118	75-70-7	Trichloromethanethiol	
P119	7803-55-6	Vanadic acid, ammonium salt	
P120	1314-62-1	Vanadium (V) oxide	

P120	1314-62-1	Vanadium pentoxide	
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-	
P001	81-81-2	Warfarin, when present at concentrations greater than 0.3%	
P121	557-21-1	Zinc cyanide	
P121	557-21-1	Zinc cyanide $Zn(CN)_2$	
P122	1314-84-7	Zinc phosphide, when present at concentrations greater than 10%	(R,T)

R 299.9225 Table 205b.
Rule 225. Table 205b reads as follows:

Table 205b

EPA Hazardous Waste Number	Chemical Abstract Services Number	Substance	Hazard Code
U001	75-07-0	Acetaldehyde	(I)
U034	75-87-6	Acetaldehyde, trichloro-	
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-	
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-	
U240	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts and esters	
U112	141-78-6	Acetic acid, ethyl ester	(I)
U144	301-04-2	Acetic acid, lead(2+) salt	
U214	563-68-8	Acetic acid, thallium(1+) salt	
See F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	
U002	67-64-1	Acetone	(I)
U003	75-05-8	Acetonitrile	(I,T)
U004	98-86-2	Acetophenone	
U005	53-96-3	2-Acetylaminofluorene	
U006	75-36-5	Acetyl chloride	(C,R,T)
U007	79-06-1	Acrylamide	
U008	79-10-7	Acrylic acid	(I)
U009	107-13-1	Acrylonitrile	
U011	61-82-5	Amitrole	
U012	62-53-3	Aniline	(I,T)
U136	75-60-5	Arsinic acid, dimethyl-	
U014	492-80-8	Auramine	

U015	115-02-6	Azaserine	
U010	50-07-7	Azirino(2',3':3,4)pyrrolo (1,2-a)indole-4,7-dione,6-amino-8-[((aminocarbonyl)oxy) methyl]-1,1a,2,8,8a,8b hexahydro-8a-methoxy-5-methyl-,	
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	
U016	225-51-4	Benz[c]acridine	
U017	98-87-3	Benzal chloride	
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	
U018	56-55-3	Benz[a]anthracene	
U094	57-97-6	1,2-Benzanthracene, 7,12-dimethyl-	
U012	62-53-3	Benzenamine	(I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-	
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-	
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	
U328	95-53-4	Benzenamine, 2-methyl-	
U353	106-49-0	Benzenamine, 4-methyl-	
U158	101-14-4	Benzenamine, 4,4'-methylenebis(2-chloro-	
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride	
U181	99-55-8	Benzenamine, 2-methyl-5-nitro	
U019	71-43-2	Benzene	(I,T)
U038	510-15-8	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)- alpha-hydroxy, ethyl ester	

U030	101-55-3	Benzene, 1-bromo-4-phenoxy-	
U035	305-03-03	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-	
U037	106-90-7	Benzene, chloro-	
U221	25376-45-8	Benzenediamine, ar-methyl-	
U028	117-81-7	1,2-Benzenedicarboxylic acid, [bis(2-ethyl-hexyl)] ester	
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	
U107	117-84-0	1,2-Benzenedicarboxylic acid, di-n-octyl ester	
U070	95-50-1	Benzene, 1,2-dichloro-	
U071	541-73-1	Benzene, 1,3-dichloro-	
U072	106-46-7	Benzene, 1,4-dichloro-	
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis=[4-chloro-	
U017	98-87-3	Benzene (dichloromethyl)-	
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl-	(R,T)
U239	1330-20-7	Benzene, dimethyl-	(I,T)
U201	108-46-3	1,3-Benzenediol	
U127	118-74-1	Benzene, hexachloro-	
U056	110-82-7	Benzene, hexahydro-	(I)
U220	108-88-3	Benzene, methyl-	
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-	
U106	606-20-2	Benzene, 1-methyl-2,6-dinitro-	
U055	98-82-8	Benzene, (1-methylethyl)-	(I)

U169	98-95-3	Benzene, nitro-	(I,T)
U183	608-93-5	Benzene, pentachloro-	
U185	82-68-8	Benzene, pentachloronitro-	
U020	98-09-9	Benzenesulfonic acid chloride	(C,R)
U020	98-09-9	Benzenesulfonyl chloride	(C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-	
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)=bis [4-chloro-	
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)=bis [4-methoxy-	
U023	98-07-7	Benzene, (trichloromethyl)-	(C,R,T)
U234	99-35-4	Benzene, 1,3,5-trinitro-	(R,T)
U021	92-87-5	Benzidine	
U202	81-07-2	1,2-Benzisothiazol-3-(2H)-one, 1,1-dioxide and salts	
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	
U090	94-58-6	1,3-Benzodioxole, 5-propyl-	
U064	189-55-9	Benzo[rst]pentaphene	
U248	81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations of 0.3% or less	
U022	50-32-8	Benzo[a]pyrene	
U197	106-51-4	p-Benzoquinone	
U023	98-07-7	Benzotrichloride	(C,R,T)
U085	1464-53-5	2,2'-Bioxirane	(I,T)

U021	92-87-5	(1,1'-Biphenyl)-4,4'-diamine	
U073	91-94-1	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-	
U091	119-90-4	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-	
U095	119-93-7	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-	
U225	75-25-2	Bromoform	
U030	101-55-3	4-Bromophenyl phenyl ether	
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-	
U031	71-36-3	1-Butanol	(I)
U159	78-93-3	2-Butanone	(I,T)
U160	1338-23-4	2-Butanone peroxide	(R,T)
U053	4170-30-3	2-Butenal	
U074	764-41-0	2-Butene, 1,4-dichloro-	(I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxybutoyx]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-	
U031	71-36-3	n-Butyl alcohol	(I)
U136	75-60-5	Cacodylic acid	
U032	13765-19-0	Calcium chromate	
U238	51-79-6	Carbamic acid, ethyl ester	
U178	815-53-2	Carbamic acid, methylnitroso-, ethyl ester	
U097	79-44-7	Carbamic chloride, dimethyl	

U114	111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters	
U062	2303-16-4	Carbamodithioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	
U215	6533-73-9	Carbonic acid, dithallium(1+) salt	
U156	79-22-1	Carbonochloridic acid, methyl ester	(I,T)
U033	353-50-4	Carbon oxyfluoride	(R,T)
U211	56-23-5	Carbon tetrachloride	
U034	75-87-6	Chloral	
U035	305-03-3	Chlorambucil	
U036	57-74-9	Chlorane, technical	
U026	494-03-1	Chlornaphazine	
U037	108-90-7	Chlorobenzene	
U038	510-15-6	Chlorobenzilate	
U039	59-50-7	4-Chloro-m-cresol	
U042	110-75-8	2-Chloroethyl vinyl ether	
U044	67-66-3	Chloroform	
U046	107-30-2	Chloromethyl methyl ether	
U047	91-58-7	beta-Chloronaphthalene	
U048	95-57-8	o-Chlorophenol	
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride	
U032	13765-19-0	Chromic acid, calcium salt	
U050	218-01-9	Chrysene	
U051	------	Creosote	
U052	1319-77-3	Cresylic acid	
U053	4170-30-3	Crotonaldehyde	
U055	98-82-8	Cumene	(I)
U246	506-68-3	Cyanogen bromide	

U197	106-51-4	1,4-Cyclohexadienedione	
U056	110-82-7	Cyclohexane	(I)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha, 2alpha,3beta,4alpha, 5alpha,6beta)-	
U057	108-94-1	Cyclohexanone	(I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexa-chloro-	
U058	50-18-0	Cyclophosphamide	
U240	94-75-7	2,4-D, salts and esters	
U059	20830-81-3	Daunomycin	
U060	72-54-8	DDD	
U061	50-29-3	DDT	
U062	2303-16-4	Diallate	
U063	53-70-3	Dibenz[a,h]anthracene	
U064	189-55-9	Dibenz[a,i]pyrene	
U066	96-12-8	1,2-Dibromo-3-chloropropane	
U069	84-74-2	Dibutyl phthalate	
U070	95-50-1	o-Dichlorobenzene	
U071	541-73-1	m-Dichlorobenzene	
U072	106-46-7	p-Dichlorobenzene	
U073	91-94-1	3,3'-Dichlorobenzidine	
U074	764-41-0	1,4-Dichloro-2-butene	(I,T)
U075	75-71-8	Dichlorodifluoromethane	
U078	75-35-4	1,1-Dichloroethylene	
U079	156-60-5	1,2-Dichloroethylene	
U025	111-44-4	Dichloroethyl ether	
U027	108-60-1	Dichloroisopropyl ether	
U024	111-91-7	Dichloromethoxy ethane	
U081	120-83-2	2,4-Dichlorophenol	

U082	87-65-0	2,6-Dichlorophenol	
U084	542-75-6	1,3-Dichloropropene	
U085	1464-53-5	1,2:3,4-Diepoxybutane	(I,T)
U108	123-91-1	1,4-Diethylene dioxide	
U028	117-81-7	Diethylhexyl phthalate	
U086	1615-80-1	N,N-Diethylhydrazine	
U087	3288-58-2	O,O-Diethyl-S-methyl-dithiophosphate	
U088	84-66-2	Diethyl phthalate	
U089	56-53-1	Diethylstilbestrol	
U090	94-58-6	Dihydrosafrole	
U091	119-90-4	3,3'-dimethoxybenzidine	
U092	124-40-3	Dimethylamine	(I)
U093	60-11-7	Dimethylaminoazobenzene	
U094	57-97-6	7,12-Dimethylbenz[a]anthracene	
U095	119-93-7	3,3'-Dimethylbenzidine	
U096	80-15-9	alpha,alpha-Dimethyl-benzylhydroperoxide	(R)
U097	79-44-7	Dimethylcarbamoyl chloride	
U098	57-14-7	1,1-Dimethylhydrazine	
U099	540-73-8	1,2-Dimethylhydrazine	
U101	105-67-9	2,4-Dimethylphenol	
U102	131-11-3	Dimethyl phthalate	
U103	77-78-1	Dimethyl sulfate	
U105	121-14-2	2,4-Dinitrotoluene	
U106	606-20-2	2,6-Dinitrotoluene	
U107	117-84-0	Di-n-octyl phthalate	
U108	123-91-1	1,4-Dioxane	
U109	122-66-7	1,2-Diphenylhydrazine	
U110	142-84-7	Dipropylamine	(I)
U111	621-64-7	Di-n-propylnitrosamine	

U041	106-89-8	Epichlorhydrin	
U001	75-07-0	Ethanal	(I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-	
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	
U067	106-93-4	Ethane, 1,2-dibromo-	
U076	75-34-3	Ethane, 1,1-dichloro-	
U077	107-06-2	Ethane, 1,2-dichloro-	
U131	67-72-1	Ethane, 1,1,1,2,2,2-hexachloro-	
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	
U117	60-29-7	Ethane, 1,1'-oxybis-	(I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	
U184	76-01-7	Ethane, pentachloro-	
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-	
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-	
U218	62-55-5	Ethanethioamide	
U226	71-55-6	Ethane, 1,1,1-trichloro-	
U227	79-00-5	Ethane, 1,1,2-trichloro-	
U359	110-80-5	Ethanol, 2-ethoxy-	
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-	
U004	98-86-2	Ethanone, 1-phenyl	
U043	75-01-4	Ethene, chloro-	
U042	110-75-8	Ethene, 2-chloroethoxy-	
U078	75-35-4	Ethene, 1,1-dichloro-	
U079	156-60-5	Ethene, trans-1,2-dichloro-	

U210	127-18-4	Ethene, 1,1,2,2-tetrachloro-	
U228	79-01-6	Ethene, trichloro-	
U112	141-78-8	Ethyl acetate	(I)
U113	140-88-5	Ethyl acrylate	(I)
U238	51-79-6	Ethyl carbamate (urethan)	
U117	60-29-7	Ethyl ether	(I)
U114	111-54-6	Ethylenebis(dithiocarbamic acid), salts and ester	
U067	106-93-4	Ethylene dibromide	
U077	107-06-2	Ethylene dichloride	
U359	110-80-5	Ethylene glycol monoethyl ether	
U115	75-21-8	Ethylene oxide	(I,T)
U116	96-45-7	Ethylene thiourea	
U076	75-34-3	Ethylidene dichloride	
U118	97-63-2	Ethyl methacrylate	
U119	62-50-0	Ethyl methanesulfonate	
U120	206-44-0	Fluoranthene	
U122	50-00-0	Formaldehyde	
U123	64-18-6	Formic acid	(C,T)
U124	110-00-9	Furan	(I)
U125	98-01-1	2-Furancarboxaldehyde	(I)
U147	108-31-6	2,5-Furandione	
U213	109-99-9	Furan, tetrahydro-	(I)
U125	98-01-1	Furfural	(I)
U124	110-00-9	Furfuran	(I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-	
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino) carbonyl]amino]-	

U126	765-34-4	Glycidylaldehyde	
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-	
U127	118-74-1	Hexachlorobenzene	
U128	87-68-3	Hexachlorobutadiene	
U130	77-47-4	Hexachlorocyclopentadiene	
U131	67-72-1	Hexachloroethane	
U132	70-30-4	Hexachlorphene	
U243	1888-71-7	Hexachloropropene	
U133	302-01-2	Hydrazine	(R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-	
U098	57-14-7	Hydrazine, 1,1-dimethyl-	
U099	540-73-8	Hydrazine, 1,2-dimethyl-	
U109	122-66-7	Hydrazine, 1,2-diphenyl-	
U134	7664-39-3	Hydrofluoric acid	(C,T)
U134	7664-39-3	Hydrogen fluoride	(C,T)
U135	7783-06-4	Hydrogen sulfide	
U135	7783-06-4	Hydrogen sulfide H2S	
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-	(R)
U116	96-45-7	2-Imidazolidinethione	
U137	193-39-5	Indeno[1,2,3cd]pyrene	
U190	85-44-9	1,3-Isobenzofurandione	
U140	78-83-1	Isobutyl alcohol	(I,T)
U141	120-58-1	Isosafrole	
U142	143-50-0	Kepone	
U143	303-34-4	Lasiocarpine	
U144	301-04-2	Lead acetate	
U146	1335-32-6	Lead, bis(acetato-O) tetrahydroxytri-	
U145	7446-27-7	Lead phosphate	
U146	1335-32-6	Lead subacetate	

U129	58-89-9	Lindane	
U163	70-25-7	MNNG	
U147	108-31-6	Maleic anhydride	
U148	123-33-1	Maleic hydrazide	
U149	109-77-3	Malononitrile	
U150	148-82-3	Melphalan	
U151	7439-97-6	Mercury	
U152	126-98-7	Methacrylonitrile	(I,T)
U092	124-40-3	Methanamine, N-methyl-	(I)
U029	74-83-9	Methane, bromo-	
U045	74-87-3	Methane, chloro-	(I,T)
U046	107-30-2	Methane, chloromethoxy-	
U068	74-95-3	Methane, dibromo-	
U080	75-09-2	Methane, dichloro-	
U075	75-71-8	Methane, dichlorodifluoro-	
U138	74-88-4	Methane, iodo-	
U119	62-50-0	Methanesulfonic acid, ethyl ester	
U211	56-23-5	Methane, tetrachloro-	
U153	74-93-1	Methanethiol	(I,T)
U225	75-25-2	Methane, tribromo-	
U044	67-66-3	Methane, trichloro-	
U121	75-69-4	Methane, trichlorofluoro-	
U036	57-74-9	4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro	
U154	67-56-1	Methanol	(I)
U155	91-80-5	Methapyrilene	
U142	143-50-0	1,3,4-Metheneo-2H-cyclobuta[cd]pentalen-2-one,1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	

U247	72-43-5	Methoxychlor	
U154	67-56-1	Methyl alcohol	(I)
U029	74-83-9	Methyl bromide	
U186	504-60-9	1-Methylbutadiene	(I)
U045	74-87-3	Methyl chloride	(I,T)
U156	79-22-1	Methyl chlorocarbonate	(I,T)
U226	71-55-6	Methylchloroform	
U157	56-49-5	3-Methylcholanthrene	
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)	
U068	74-95-3	Methylene bromide	
U080	75-09-2	Methylene chloride	
U159	78-93-3	Methyl ethyl ketone	(I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide	(R,T)
U138	74-88-4	Methyl iodide	
U161	108-10-1	Methyl isobutyl ketone	(I)
U162	80-62-6	Methyl methacrylate	(I,T)
U161	108-10-1	4-Methyl-2-pentanone	(I)
U164	56-04-2	Methylthiouracil	
U010	50-07-7	Mitomycin	(C)
U059	20830-81-3	5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-	
U167	134-32-7	1-Naphthalenamine	
U168	91-59-8	2-Naphthalenamine	
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-	
U165	91-20-3	Naphthalene	
U047	91-58-7	Naphthalene, 2-chloro-	

U166	130-15-4	1,4-Naphthalenedione	
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1-biphenyl)-4,4'diyl)]-bis(azo)bis (5-amino-4-hydroxy)-, tetrasodium salt	
U166	130-15-4	1,4-Naphthoquinone	
U167	134-32-7	alpha-Naphthylamine	
U168	91-59-8	beta-Naphthylamine	
U217	10102-45-1	Nitric acid, thallium(1+) salt	
U169	98-95-3	Nitrobenzene	(I,T)
U170	100-02-7	p-Nitrophenol	
U171	79-46-9	2-Nitropropane	(I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine	
U173	1116-54-7	N-Nitrosodiethanolamine	
U174	55-18-5	N-Nitrosodiethylamine	
U176	759-73-9	N-Nitroso-N-ethylurea	
U177	684-93-5	N-Nitroso-N-methylurea	
U178	615-53-2	N-Nitroso-N-methylurethane	
U179	100-75-4	N-Nitrosopiperidine	
U180	930-55-2	N-Nitrosopyrrolidine	
U181	99-55-8	5-Nitro-o-toluidine	
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide	
U058	50-18-0	2H-1,3,2-Oxazaphosphorin, 2-amine, N,N-bis(2-chloroethyl) tetrahydro-, 2-oxide	
U115	75-21-8	Oxirane	(I,T)
U126	765-34-4	Oxiranecarboxyaldehyde	
U041	106-89-8	Oxirane, 2-(chloromethyl)-	
U182	123-63-7	Paraldehyde	
U183	608-93-5	Pentachlorobenzene	

U184	76-01-7	Pentachloroethane	
U185	82-68-8	Pentachloronitrobenzene	
See F027	87-86-5	Pentachlorophenol	
U161	108-10-1	Pentanonl, 4-methyl-	
U186	504-60-9	1,3-Pentadiene	(I)
U187	62-44-2	Phenacetin	
U188	108-95-2	Phenol	
U048	95-57-8	Phenol, 2-chloro-	
U039	59-50-7	Phenol, 4-chloro-3-methyl-	
U081	120-83-2	Phenol, 2,4-dichloro-	
U082	87-65-0	Phenol, 2,6-dichloro-	
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-	
U101	105-67-9	Phenol, 2,4-dimethyl-	
U052	1319-77-3	Phenol, methyl-	
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	
U170	100-02-7	Phenol, 4-nitro-	
See F027	87-86-5	Phenol, pentachloro-	
See F027	58-90-2	Phenol, 2,3,4,6-tetrachloro-	
See F027	95-95-4	Phenol, 2,4,5-trichloro-	
See F027	88-06-2	Phenol, 2,4,6-trichloro-	
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-	
U145	7446-27-7	Phosphoric acid, lead salt	
U087	3288-58-2	Phosphorodithioic acid, 0,0-diethyl-S-methyl ester	
U189	1314-80-3	Phosphorus sulfide	(R)
U190	85-44-9	Phthalic anhydride	
U191	109-06-8	2-Picoline	
U179	100-75-4	Piperidine, 1-nitroso-	

U192	23950-58-5	Pronamide	
U194	107-10-8	1-Propanamine	(I,T)
U111	621-64-7	1,Propanamine, N-nitroso-N-propyl-	
U110	142-84-7	1-Propanamine, N-propyl-	(I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-	
U083	78-87-5	Propane, 1,2-dichloro-	
U149	109-77-3	Propanedinitrile	
U171	79-46-9	Propane, 2-nitro-	(I,T)
U027	108-60-1	Propane, 2,2'oxybis[2-chloro-	
U193	1120-71-4	1,3-Propane sultone	
See F027	93-72-1	Propionic acid, 2-(2,4,5-trichlorphenoxy)-	
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)	
U140	78-83-1	1-Propanol, 2-methyl-	(I,T)
U002	67-64-1	2-Propanone	(I)
U007	79-06-1	2-Propenamide	
U084	542-75-6	Propene, 1,3-dichloro-	
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	
U009	107-13-1	2-Propenenitrile	
U152	126-98-7	2-Propenenitrile, 2-methyl-	(I,T)
U008	79-10-7	2-Propenoic acid	(I)
U113	140-88-5	2-Propenoic acid, ethyl ester	(I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	(I,T)
U194	107-10-8	n-Propylamine	(I,T)
U083	78-87-5	Propylene dichloride	

U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-	
U196	110-86-1	Pyridine	
U191	109-06-8	Pyridine, 2-methyl-	
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	
U180	930-55-2	Pyrrole, tetrahydro-N-nitroso-	
U200	50-55-5	Reserpine	
U201	108-46-3	Resorcinol	
U202	81-07-2	Saccharin and salts	
U203	94-59-7	Safrole	
U204	7783-00-8	Selenious acid	
U204	7783-00-8	Selenium dioxide	
U205	7488-56-4	Selenium sulfide	
U205	7488-56-4	Selenium sulfide SeS_2	(R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)	
See F027	93-72-1	Silvex	
U206	18883-66-4	Streptozotocin	
U103	77-78-1	Sulfuric acid, dimethyl ester	
U189	1314-80-3	Sulfur phosphide	(R)
See F027	93-76-5	2,4,5-T	
U207	95-94-3	1,2,4,5-Tetrachlorobenzene	
U208	630-20-6	1,1,1,2-Terachloroethane	
U209	79-34-5	1,1,2,2-Tetrachloroethane	
U210	127-18-4	Tetrachloroethylene	
See F027	58-90-2	2,3,4,6-Tetrachlorophenol	
U213	109-99-9	Tetrahydrofuran	(I)

U214	563-68-8	Thallium (I) acetate	
U215	6533-73-9	Thallium (I) carbonate	
U216	7791-12-0	Thallium (I) chloride	
U216	7791-12-0	Thallium chloride T1C1	
U217	10102-45-1	Thallium (I) nitrate	
U218	62-55-5	Thioacetamide	
U153	74-93-1	Thiomethanol	(I,T)
U244	137-26-8	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-	
U219	62-56-6	Thiourea	
U244	137-26-8	Thiram	
U220	108-88-3	Toluene	
U221	25376-45-8	Toluenediamine	
U223	26471-62-5	Toluene diisocyanate	(R,T)
U328	95-53-4	o-Toluidine	
U353	106-49-0	p-Toluidine	
U222	636-21-5	o-Toluidine hydrochloride	
U011	61-82-5	1H-1,2,4-Triazol-3-amine	
U227	79-00-5	1,1,2-Trichloroethane	
U228	79-01-6	Trichloroethylene	
U121	75-69-4	Trichloromonofluoromethane	
See F027	95-95-4	2,4,5-Trichlorophenol	
See F027	88-06-2	2,4,6-Trichlorophenol	
U234	99-35-4	1,3,5-Trinitrobenzene	(R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-	
U235	126-72-7	Tris(2,3-Dibromopropyl) phosphate	
U236	72-57-1	Trypan blue	
U237	66-75-1	Uracil mustard	
U176	759-73-9	Urea, N-ethyl-N-nitroso-	

U177	684-93-5	Urea, N-methyl-N-nitroso-	
U043	75-01-4	Vinyl chloride	
U248	81-81-2	Warfarin, & salts, when present at concentration of 0.3% or less	
U239	1330-20-7	Xylene	(I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxy-benzoyl)oxy]-, methyl ester	
U249	1314-84-7	Zinc phosphide, when present at concentration 10% or less	

R 299.9226 Table 205c.
Rule 226. Table 205c reads as follows:

Table 205c			
Michigan Hazardous Waste Number	Chemical Abstract Services Number	Substance	Hazard Code
001U	50-76-0	Actinomycin D	
002U	107-05-1	Allyl chloride	
003U	117-79-3	2-aminoanthraquinone	
004U	60-09-3	Aminoazobenzene	
005U	97-56-3	0-aminoazotoluene	
006U	92-67-1	4-aminobiphenyl	
007U	132-32-1	3-amino-9-ethyl carbazole	
157U	57360-17-5	3-amino-9-ethyl carbazole hydrochloride	
008U	82-28-0	1-amino-2-methyl anthraquinone	
009U	101-05-3	Anilazine	
158U	142-04-1	Aniline hydrochloride	
011U	90-04-0	o-Anisidine	
012U	134-29-2	o-Anisidine hydrochloride	
013U	Class-01-0	Antimony (when in the form of particles 100 microns or less)	
014U	1397-94-0	Antimycin A	
147U	2642-71-9	Azinphos-ethyl	
148U	86-50-0	Azinphos-methyl	
159U	103-33-3	Azobenzene	
015U	101-27-9	Barban	
016U	22781-23-3	Bendiocarb	
017U	17804-35-2	Benomyl	
020U	1689-84-5	Bromoxynil	

160U	106-99-0	1,3-Butadiene	
161U	85-68-7	Butyl benzl phthalate	
021U	140-57-8	2(p-tert-Butylphenoxy)-isopropyl-2-chloroethyl sulfite	
022U	2425-06-1	Captafol	
023U	133-06-2	Captan	
024U	63-25-3	Carbaryl	
025U	1563-66-2	Carbofuran	
027U	786-19-6	Carbophenothion	
028U	Class-08-6	Chloramines	
152U	470-90-6	Chlorfenuinphos	
029U	2921-88-2	Chloropyrifos	
030U	Class-05-3	Chlorinated dibenzofurans (other than those listed in Table 202)	
031U	Class-05-4	Chlorinated dioxins (other than those listed in Table 202)	
032U	7782-50-5	Chlorine gas	
033U	107-07-3	2-Chloroethanol	
034U	6959-48-4	3-(Chloromethyl) pyridine hydrochloride	
150U	106-48-9	p-chlorophenol	
162U	7005-72-3	1-chloro-4-phenoxybenzene	
036U	5131-60-2	4-chloro-m-phenylenediamine	
037U	95-83-0	4-chloro-o-phenylenediamine	
038U	126-99-8	Chloroprene	
163U	590-21-6	1-chloropropene	
151U	96-79-4	5-chloro-o-toluidene	
040U	1420-04-8	Clonitralid	

041U	Class-01-6	Cobalt (when in the form of particles 100 microns or less)	
042U	56-72-4	Coumasphos	
043U	120-71-8	p-Cresidine	
044U	7700-17-6	Crotoxyphos	
046U	66-81-9	Cycloheximide	
164U	72-55-9	P,P' DDE	
047U	8065-48-3	Demeton	
048U	39156-41-7	2,4-Diaminoanisole sulfate	
049U	101-80-4	4,4'-Diaminodiphenyl ether	
050U	95-80-7	2,4-Diaminotoluene	
051U	333-41-5	Diazinon	
052U	117-80-6	Dichlone	
054U	62-73-7	Dichlorvos	
055U	141-66-2	Dichrotophos	
056U	64-67-5	Diethyl sulfate	
165U	105-55-5	N,N'-Diethylthiourea	
057U	39300-45-3	Dinocap	
058U	78-34-2	Dioxathion	
059U	2104-64-5	EPN	
166U	106-88-7	1,2-Epoxybutane	
061U	563-12-2	Ethion	
063U	115-90-2	Fensulfothion	
064U	55-38-9	Fenthion	
065U	33245-39-5	Fluchloralin	
068U	680-31-9	Hexamethyl phosphoramide	
070U	123-31-9	Hydroquinone	
071U	1072-52-2	N-(2-Hydroxyethyl) ethyleneimine	
072U	7778-54-3	Hypochlorite	

073U	54-85-3	Isonicotinic acid hydrazine	
167U	59299-51-3	Kanechlor C	
074U	463-51-4	Ketene	
075U	78-97-7	Lactonitril	
076U	21609-90-5	Leptophos	
077U	Class-02-0	Lithium and compounds	
078U	569-64-2	Malachite green	
079U	121-75-5	Malathion	
080U	72-33-3	Mestranol	
152U	126-98-7	Methacrylonitrile	
082U	838-88-0	4,4'-Methylenebis(2-methylaniline)	
083U	101-61-1	4,4'-Methylenebis(N,N-dimethylaniline)	
086U	90-12-0	1-Methylnaphthalene	
088U	7786-34-7	Mevinphos	
089U	315-18-4	Mexacarbate	
090U	2385-85-5	Mirex	
092U	6923-22-4	Monocrotophos	
093U	505-60-2	Mustard gas	
094U	300-76-5	Naled	
095U	2243-62-1	1,5-Napthalenediamine	
096U	Class-02-2	Nickel (when in the form of particles 100 microns or less)	
097U	61-57-4	Niridazole	
098U	139-94-6	Nithiazide	
099U	602-87-9	5-Nitroacenaphthene	
100U	99-59-2	Nitro-o-anisidine	
101U	92-93-3	Nitrobiphenyl	
102U	1836-75-5	Nitrofen	

103U	531-82-8	N-(4-(5-nitro-2-furanyl)-2-thiazolyl)-acetamide	
104U	51-75-2	Nitrogen mustard	
106U	156-10-5	p-Nitrosodiphenylamine	
168U	4549-40-0	N-Nitrosomethylvinylamine	
108U	135-20-6	N-nitroso-N-phenylhydroxylamine, ammonium salt	
169U	29082-74-4	Octachlorostyrene	
110U	301-12-2	Oxydemeton-methyl	
111U	1910-42-5	Paraquat	
112U	79-21-0	Peroxyacetic acid	
113U	136-40-3	Phenazopyridine hydrochloride	
114U	3546-10-9	Phenesterin	
115U	50-06-6	Phenobarbitol	
116U	57-41-0	Phenytoin	
117U	630-93-3	Phenytoin sodium	
118U	4104-14-7	Phosazetim	
119U	732-11-6	Phosmet	
120U	13171-21-6	Phosphamidon	
121U	120-62-7	Piperonyl sulfoxide	
122U	Class-07-8	Polybrominated biphenyls (PBB)	
124U	57-57-8	Propiolactone	
127U	51-52-5	Propylthiouracil	
128U	83-74-4	Rotenone	
129U	57-56-7	Semicarbazide	
170U	563-41-7	Semicarbazide hydrochloride	
153U	62-74-8	Sodium fluoroacetate	
131U	100-42-5	Styrene	
132U	95-06-7	Sulfallate	

134U	72-54-8	TDE	
135U	107-49-3	TEPP	
136U	13071-79-9	Terbufos	
137U	961-11-5	Tetrachlorvinphos	
138U	139-65-1	4,4'-Thiodianiline	
139U	95-53-4	o-Toluidine	
140U	Class-08-4	Triaryl phosphate esters	
154U	56-35-9	Bis(tri-n-butyl tin) oxide	
171U	688-73-3	Tributyltin (and other salts and esters)	
172U	87-61-6	1,2,3-Trichlorobenzene	
173U	120-82-1	1,2,4-Trichlorobenzene	
141U	52-68-6	Trichlorfon	
142U	1582-09-8	Trifluralin	
143U	137-17-7	2,4,5-Trimethylaniline	
144U	512-56-1	Triamethylphosphate	
174U	51-79-6	Urethane	
175U	593-60-2	Vinyl bromide	
155U	75-35-4	Vinylidene chloride	
146U	137-30-4	Ziram	

APPENDIX C.2

CHARACTERIZATION FOR WASTES MANAGED AT CONTAINER FACILITY

DYNECOL
MID 074259565

DYNECOL, I
6520 GEORGIA ST
DETROIT, MICHIGAN
PHONE: (31.
FAX: (313

..ertification: Y N

WASTE APPROVAL FORM

Approval # 100001

Code

I GENERAL INFORMATION

Customer: ABC COMPANY	Generator: SAME AS CUSTOMER
Address: 1234 W. E. ROAD	Address:
City: TOWNHALL	City:
State: MI Zip Code: 48132	State: Zip Code:
Contact: Mr. Jim Doe	Contact:
Phone #: (313) 123-4567 Fax:	Phone #: Fax:
24 hour phone #:	EPA ID#:

II WASTE DESCRIPTION

Waste Common Name: Stoddard Still Bottoms

Specific Process Generating the Waste: Distillation of stoddard solvent.

WASTE COMPOSITION (must equal 100%):	ACTUAL %	MIN.	MAX.
Stoddard Solvent	25		
Oil	70		
Dirt	5		

CIRCLE YES (Y) OR NO (N) TO THE FOLLOWING CHARACTERISTICS OR CONTAMINANTS

Carcinogen Y N Oxidizer Y N Organics Y N Explosives Y N Phenols Y N Hexavalent Chromium Y
Radioactives Y N Poison Y N PCBs Y N Pesticides Y N

As defined in 40 CFR 268: ( ) Non-wastewater (x) Wastewater LIQUID SOLID SLURRY

Sample submitted to Dynecol: Y N Color: BLACK

III RCRA/ACT 64 WASTE CHARACTERIZATION

This is a hazardous waste as defined by either Michigan Act 64 or EPA 40 CFR 261: Yes X No

If yes, list all waste codes: D001, D006, D008.

This is a non-hazardous waste as defined by Michigan Act 136: Yes No

If yes, list all waste codes:

This waste contains a toxicity characteristic of 40 CFR 261.24 identified as waste codes D018 through D043:
Yes No X * Unknown

If yes, list all waste codes:

* If based on generator knowledge, please read and understand certification in Section VI

IV SHIPPING INFORMATION

Waste Volume: 5 - 10 UNIT: (circle one) GALLONS POUNDS DRUMS OTHER________

Shipment Frequency: (circle one) WEEK MONTH QUARTER YEAR ONE TIME ONLY

DOT Proper Shipping Name per 49 CFR 172.101:

RQ, WASTE FLAMMABLE LIQUID, NOS.

DOT Hazard Class: 3 UN/NA Number: UN 1993 Packing Group: I II III None

V COMMENTS

VI GENERATOR CERTIFICATION

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and I believe that the information I submitted is true, accurate and complete.

ABC COMPANY
Generator Name (Please print or type)

11 / 01 / 94
Date

JIM DOE
Generator Signature

MANAGER
Title

VII WASTE ANALYSIS

IIMUM ANALYTICAL REQUIREMENTS FOR HAZARDOUS WASTES ARE (All Methods per SW846):

- Flash, pH, and Reactives (Detection limit of 20ppm for Cyanide and Sulfide)
- PCBs, %HOCs (Method 9020), Nickel and Thallium
- TCLP metals: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
- Michigan metals: Copper and Zinc

(The above items may be restricted from land disposal.)

LABORATORY ANALYSIS IS ATTACHED FOR THE ABOVE ITEMS:

Yes______ No______ Complete______ Partial______* MSDS______

* ______ Authorization for Dynecol to perform analysis as necessary

Purchase Order #____________

VIII DYNECOL USE ONLY

Approval #:____________

Treatment Facility:________ CMF: ________

Approved by: ____________ Date: ________

Expiration date: ____________

APPENDIX C.3

CHARACTERIZATION FOR WASTES MANAGED AT BULK TREATMENT PLANT

DYNECOL
MID 074259565

DYNECOL, I.

6520 GEORGIA ST
DETROIT, MICHIGAN
PHONE: (313) 571-
FAX: (313) 571-

rtification: Y N

WASTE APPROVAL FORM

Approval #__________ Code__________

I GENERAL INFORMATION

Customer: XYZ CORPORATION	Generator: SAME AS CUSTOMER
Address: 9876 DIRT ROAD	Address:
City: TOWNSQUARE	City:
State: MI Zip Code: 48084	State: Zip Code:
Contact: Mr. Joe Customer	Contact:
Phone #: (313) 987-1234 Fax:	Phone #: Fax:
24 hour phone #:	EPA ID#:

II WASTE DESCRIPTION

Waste Common Name: PICKLE LIQUOR SLUDGE

Specific Process Generating the Waste: ACID PCKLING (COLD STEEL)

STE COMPOSITION (must equal 100%):	ACTUAL %	MIN.	MAX.
FERROUS SULFATE	95		
WATER	5		

CIRCLE YES (Y) OR NO (N) TO THE FOLLOWING CHARACTERISTICS OR CONTAMINANTS

Carcinogen Y N Oxidizer Y N Organics Y N Explosives Y N Phenols Y N Hexavalent Chromium Y

Radioactives Y N Poison Y N PCBs Y N Pesticides Y N

As defined in 40 CFR 268: ( ) Non-wastewater (x) Wastewater LIQUID SOLID SLURRY

Sample submitted to Dynecol: Y N Color: GREEN

III RCRA/ACT 64 WASTE CHARACTERIZATION

This is a hazardous waste as defined by either Michigan Act 64 or EPA 40 CFR 261: Yes X No______

If yes, list all waste codes: K062, D002, D005, D007, D008, D009, D010.

This is a non-hazardous waste as defined by Michigan Act 136: Yes______ No x

s, list all waste codes:

is waste contains a toxicity characteristic of 40 CFR 261.24 identified as waste codes D018 through D043:

Yes______ No x * Unknown______

If yes, list all waste codes:

* If based on generator knowledge, please read and understand certification in Section VI

IV SHIPPING INFORMATION

Waste Volume: 5,000 UNIT: (circle one) GALLONS POUNDS DRUMS OTHER________

Shipment Frequency: (circle one) WEEK MONTH QUARTER YEAR ONE TIME ONLY

DOT Proper Shipping Name per 49 CFR 172.101:

WASTE CORROSIVE LIQUID, NOS (SULFURIC)

DOT Hazard Class: 8, PGII UN/NA Number: UN 1760 Packing Group: I II III None

V COMMENTS

VI GENERATOR CERTIFICATION

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and I believe that the information I submitted is true, accurate and complete.

XYZ CORPORATION
Generator Name (Please print or type)

11 / 01 / 94
Date

JOE CUSTOMER
Generator Signature

PRESIDENT
Title

VII WASTE ANALYSIS

MINIMUM ANALYTICAL REQUIREMENTS FOR HAZARDOUS WASTES ARE (All Methods per SW846):

- Flash, pH, and Reactives (Detection limit of 20ppm for Cyanide and Sulfide)
- PCBs, %HOCs (Method 9020), Nickel and Thallium
- TCLP metals: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
- Michigan metals: Copper and Zinc

(The above items may be restricted from land disposal.)

LABORATORY ANALYSIS IS ATTACHED FOR THE ABOVE ITEMS:

Yes________ No________ Complete________ Partial________* MSDS________

* ________ Authorization for Dynecol to perform analysis as necessary

Purchase Order #________________

VIII DYNECOL USE ONLY

Approval #:________________

Treatment Facility:________________ CMF:________________

Approved by:________________ Date:________________

Expiration date:________________

APPENDIX C.4

LAND DISPOSAL RESTRICTION FORMS

YNECOL
MID 074259565

DYNECOL, INC.
(313) 571-7141

LAND DISPOSAL RESTRICTED AND PROHIBITED WASTE NOTICE AND CERTIFICATION

Approval # ______________

The wastes identified on manifest #______________ and bearing the EPA Hazardous Waste Code(s) ______________ are subject to the land restrictions of 40 CFR Part 268. The wastes do not meet the treatment standards specified in Part 268 subpart D or do not meet the prohibitions specified in 268.32 or RCRA section 3004(d).

Check all boxes that apply:

1. TOXICITY CHARACTERISTIC

This shipment contains the following characteristic waste(s) not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:

( ) Wastewater (containing <1% TOC and <1% filterable solids)
( ) Non-Wastewater

Waste Code	Consituent	Waste Code	Constituent
( ) D004	Arsenic	( ) D027	1.4-Dichlorobenzene
( ) D005	Barium	( ) D028	1.2-Dichlorethane
( ) D006	Cadmium	( ) D029	1.1-Dichlorethylene
( ) D007	Chromium	( ) D030	2.4-Dinitrotoluene
( ) D008	Lead	( ) D031	Heptachlor (& epoxide)
( ) D009*	Mercury	( ) D032	Hexachlorobenzene
( ) D010	Selenium	( ) D033	Hezachlorobutadiene
( ) D011	Silver	( ) D034	Hexachloroethane
( ) D018	Benzene	( ) D035	Methyl ethyl ketone
( ) D019	Carbon tetrachloride	( ) D036	Nitrobenzene
( ) D020	Chlordane	( ) D037	Pentachlorophenol
( ) D021	Chlorobenzene	( ) D038	Pyridine
( ) D022	Chloroform	( ) D039	Tetrachloroethylene
( ) D023	o-Cresol	( ) D040	Trichloroethylene
( ) D024	m-Cresol	( ) D041	2.4.5-Trichlorophenol
( ) D025	p-Cresol	( ) D042	2.4.6-Trichlorophenol
( ) D026	Cresol	( ) D043	Vinyl chloride

*D009 Mercury Subcategory ______________

2. WASTE CODE D002

This shipment contains liquid hazardous waste having a pH of:

( ) less than or equal to 2.0 (ACID)
( ) greater than or equal to 12.5

3. T.C. ORGANICS (D018-D043) CORROSIVE WASTES (D002) UNDERLYING HAZARDOUS CONSTITUENTS

____
____
____
____

( ) No Underlying Hazardous Constituents

( ) See attached list of Underlying Hazardous Constituents

4. WASTE CODE K062

This shipment contains K062 hazardous waste, not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:

( ) Wastewater (containing <1% TOC and <1% filterable solids)
( ) Non-Wastewater

5. WASTE CODES F006 & F019 (40 CFR 268.41)

This shipment contains F006 and/or F019 listed hazardous waste not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:

( ) F006 Wastewater
( ) F006 Non-Wastewater

( ) F019 Wastewater
( ) F019 Non-Wastewater

6. CALIFORNIA LIST PROHIBITION LEVELS (40 CFR 268.32)

This shipment contains the following constituents at levels greater than or equal to prohibition levels given below:

( ) 1,000 mg/kg Halogenated Organic Compounds (HOCs)
( ) 50 ppm PCBs (liquid wastes)
( ) 134 mg/L Nickel (liquid wastes)
( ) 130 mg/L Thallium (liquid wastes)

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including a possibility of a fine and/or imprisonment.

____
Authorized Signature

____
Name of Generator

____
Generator EPA ID#

____
Date

PLEASE SEND ORIGINAL WITH SHIPMENT

GENERATOR MUST RETAIN A COPY FOR FILES

DYNECOL

MID 074259565

DYNECOL, IN

(313) 571-71-

CERTIFICATION FORM
Universal Treatment Standards (UTS)

Approval #: ____________________

Generator Name: ____

EPA ID#: ____

The EPA has promulgated new treatment standards for wastes displaying the characteristic of ignitability (D001). and/or corrosivity (D002). and/or toxicity (D012-D043). Those ignitable wastes containing >10% total organic carbon (i.e. D001 high TOC subcategory) do NOT require this certification form.

In response to these new treatment standards Dynecol. Inc. must be assured that all waste streams of concern must comply with these new standards.

The generator may make this determination based on waste analysis data and/or knowledge of the waste. When the determination is based on generator knowledge. the EPA requires that the operating record of the generator and all supporting data used to make this determination be kept by the generator.

Dynecol. Inc. is requesting certification that the waste material corresponding to Approval #______________ does/does not (circle one) contain hazardous constituents as listed in 40 CFR 268.42 Table UTS -- Universal Treatment Standards (see attached).

FOR MATERIAL THAT CONTAINS HAZARDOUS CONSTITUENTS
(constituents are at a concentration above the treatment standard)

I, ________________________________, hereby certify that the waste material corresponding to
printed name of authorized representative
Approval #______________ contains only the hazardous constituents that have been specified on the attached form-- Table UTS.

FOR MATERIAL THAT DOES NOT CONTAIN HAZARDOUS CONSTITUENTS
(constituents are at a concentration below the treatment standard)

I, ________________________________, hereby certify that the waste material corresponding to
printed name of authorized representative
Approval #______________ contains none of the hazardous constituents that have been specified in 40 CFR 268.48 Table UTS.

I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including a possibility of a fine and/or imprisonment.

______________________________ ________________________ ____________
Authorized Signature Printed Name Date

ONE-TIME CERTIFICATION--GENERATOR MUST RETAIN A COPY OF THIS DOCUMENT

SYNECOL

MID 074259565

SYNECOL, INC.

(313) 571-71..

LAND DISPOSAL RESTRICTED AND PROHIBITED WASTE NOTICE AND CERTIFICATION

The wastes identified on manifest #________________________ and bearing the EPA Hazardous Waste Code(s) listed below are subject to the land restrictions of 40 CFR Part 268. The wastes do not meet the treatment standards specified in Part 268 subpart D or do not meet the prohibitions specified in 268.32 or RCRA section 3004(d).

INSTRUCTIONS

Column 1: Identify the manifest line item of the waste being referenced.
Column 2: Identify all hazardous waste codes that apply to the waste shipment.
Column 3: For each waste code, check the appropriate Treatablility Group: Wastewater (WW) or Non-Wastewater (NWW).
Column 4: Enter the appropriate Subcategory, if applicable. (Note: Ignitable wastes containing greater than 10% total organic carbon (D001 high TOC subcategory) do not require underlying hazardous constituent certification.) If the waste is a debris that will be treated using one of the alternative treatment technologies provided by 40 CFR 268.45, also enter "Debris".
Column 5: Check Yes/No for Underlying Hazardous Constituents. If "Yes" then attach list of Underlying Hazardous Constituents 40 CFR 268.48 Table UTS.
Column 6: If the waste is a California List Waste, check the appropriate constituents that are at levels greater than or equal to the prohibition levels listed. PCBs, Nickel and Thallium apply to liquid wastes only.

1. Manifest Line Item #	2. Hazardous Waste Code(s)	3. Treatability Group		4. Subcategory (if applicable or "Debris")	5. Underlying Hazardous Constituents		6. California List Wastes (>=levels listed)			
		WW	NWW		Yes*	No	1000 mg/L HOCs	50 ppm PCBs	134 mg/L Nickel	130 mg/L Thallium

*If Yes- Attach list of Underlying Hazardous Constituents- 40 CFR 268.48 Table UTS

I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including a possibility of a fine and/or imprisonment.

Authorized Signature ____________ Company Name ____________ EPA ID# ____________ Date ____________

PLEASE SEND ORIGINAL WITH SHIPMENT -- GENERATOR MUST RETAIN A COPY FOR FILES

DYNECOL
MID 074259565

DYNECOL, IN

(313) 571-71-

LAND DISPOSAL RESTRICTED AND PROHIBITED WASTE NOTICE AND CERTIFICATION

Approval # _______________

The waste identified on manifest #___________________ and bearing the EPA Hazardous Waste Code(s) ______________________________ ____________ is subject to the land restrictions of 40 CFR Part 268. The waste does not meet the treatment standards specified in Part 268 subpart D or does not meet the prohibitions specified in 268.32 or RCRA section 3004(d). Check all boxes that apply:

1. TOXICITY CHARACTERISTIC

This shipment contains the following characteristic waste(s) not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:
( ) Wastewater (containing <1% TOC and <1% filterable solids)
( ) Non-Wastewater

Waste Code	Consituent	Waste Code	Constituent
( ) D004	Arsenic	( ) D027	1.4-Dichlorobenzene
( ) D005	Barium	( ) D028	1.2-Dichloroethane
( ) D006	Cadmium	( ) D029	1.1-Dichloroethylene
( ) D007	Chromium	( ) D030	2.4-Dinitrotoluene
( ) D008	Lead	( ) D031	Heptachlor (& epoxide)
( ) D009*	Mercury	( ) D032	Hexachlorobenzene
( ) D010	Selenium	( ) D033	Hexachlorobutadiene
) D011	Silver	( ) D034	Hexachloroethane
( ) D018	Benzene	( ) D035	Methyl ethyl ketone
( ) D019	Carbon tetrachloride	( ) D036	Nitrobenzene
( ) D020	Chlordane	( ) D037	Pentachlorophenol
( ) D021	Chlorobenzene	( ) D038	Pyridine
( ) D022	Chloroform	( ) D039	Tetrachloroethylene
( ) D023	o-Cresol	( ) D040	Trichloroethylene
( ) D024	m-Cresol	( ) D041	2.4.5-Trichlorophenol
( ) D025	p-Cresol	( ) D042	2.4.6-Trichlorophenol
( ) D026	Cresol	( ) D043	Vinyl chloride

*D009 Mercury Subcategory (Non-Wastewater only)____________________

2. CHARACTERISTIC OF CORROSIVITY (D002)

( ) This shipment contains a corrosive waste as defined in 40 CFR 261.22(a) and bears the EPA Hazardous Waste Number of D002.

3. T.C. ORGANICS (D018-D043) CORROSIVE WASTES (D002) UNDERLYING HAZARDOUS CONSTITUENTS

____

____

____

____

( ) No Underlying Hazardous Constituents

( ) See attached list of Underlying Hazardous Constituents 40 CFR 268.48 Table UTS

4. WASTE CODE K062

This shipment contains K062 hazardous waste, not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:
( ) Wastewater
( ) Non-Wastewater

5. WASTE CODES F006 & F019 (40 CFR 268.41)

This shipment contains F006 and/or F019 listed hazardous waste not conforming to treatment standards per 40 CFR Part 268.
Please check the appropriate category:

( ) F006 Wastewater	( ) F006 Non-Wastewater
( ) F019 Wastewater	( ) F019 Non-Wastewater

6. CALIFORNIA LIST PROHIBITION LEVELS (40 CFR 268.32)

This shipment contains the following constituents at levels greater than or equal to prohibition levels given below:

( ) 1.000 mg/kg Halogenated Organic Compounds (HOCs)
( ) 50 ppm PCBs (liquid wastes)
( ) 134 mg/L Nickel (liquid wastes)
( ) 130 mg/L Thallium (liquid wastes)

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including a possibility of a fine and/or imprisonment.

____
Authorized Signature

____
Name of Generator

____
Generator EPA ID#

____
Date

PLEASE SEND ORIGINAL WITH SHIPMENT

GENERATOR MUST RETAIN A COPY FOR FILES

YNECOL
MID 074259565

DYNECOL, IN

(313) 571-71

40 CFR 268.48 TABLE UTS - Universal Treatment Standards
UNDERLYING HAZARDOUS CONSTITUENT FORM

Approval#_______________ Generator Name: ______________________________

CHECK ALL CONSTITUENTS PRESENT <u>AND</u> SPECIFY WASTEWATER (WW) OR NON-WASTEWATER (N/WW)

SEMIVOLATILES:

CONSTITUENT	mg/l WW	mg/kg N/WW
Acenaphthene	0.59	3.4
Acenaphthylene	0.059	3.4
Acetophenone	0.010	9.7
2-Acetylaminofluorene	0.059	140
Acrylamide	19	23
Aniline	0.81	14
Anthracene	0.059	3.4
Benzal Chloride	0.055	6.0
Benz(a) anthracene	0.059	3.4
Benzo(b) fluoranthene	0.11	6.8
Benzo(k) fluoranthene	0.11	6.8
Benzo(g,h,i) perylene	0.0055	1.8
Benzo(a) pyrene	0.061	3.4
bis(2-Chloroisopropyl) ether	0.055	7.2
4-Bromophenyl phenyl ether	0.055	15
Butyl benzyl phthalate	0.017	28
p-Chloroaniline	0.46	16
bis(2-Chloroethoxy) methane	0.036	7.2
bis(2-Chloroethyl) ether	0.033	6.0
Chrysene	0.059	3.4
m-Cresol	0.77	5.6
p-Cresol	0.77	5.6
o-Cresol	0.11	5.6
p-Chloro-m-cresol	0.018	14
2-Chloronaphthalene	0.055	5.6
2-Chlorophenol	0.044	5.7
Dibenz (a,h) anthracene	0.055	8.2
tris(2,3-Dibromopropyl) phosphate	0.11	0.10
m-Dichlorobenzene	0.036	6.0
o-Dichlorobenzene	0.088	6.0
p-Dichlorobenzene	0.090	6.0
2,4-Dichlorophenol	0.044	14
2,6-Dichlorophenol	0.044	14
Diethyl phthalate	0.20	28
2,4-Dimethyl phenol	0.036	14
Dimethyl phthalate	0.047	28
Di-n-butyl phthalate	0.057	28
1,4-Dinitrobenzene	0.32	2.3
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	0.066	2.5
4,6-Dinitro-o-cresol	0.28	160
2,4-Dinitrotoluene	0.32	140
Di-n-octyl phthalate	0.017	28
Di-n-propylnitrosamine	0.40	14
bis(2-Ethylhexyl) phthalate	0.28	28

CONSTITUENT	mg/l WW	mg/kg N/WW
Fluoranthene	0.068	3.4
Fluorene	0.059	3.4
Hexachlorobenzene	0.055	10
Hexachlorobutadiene	0.055	5.6
Hexachloroethane	0.055	30
Hexachlorocyclopentadiene	0.057	2.4
Hexachloropropylene	0.035	30
Indeno (1,2,3-c,d) pyrene	0.0055	3.4
Isodrin	0.021	0.066
Isosafrole	0.081	2.6
Kepone	0.0011	0.13
Methapyrilene	0.081	1.5
3-Methylcholanthrene	0.0055	15
4,4-Methylene bis(2-chloroaniline)	0.50	30
Methyl parathion	0.014	4.6
o-Nitroaniline	0.27	14
p-Nitroaniline	0.028	28
Nitrobenzene	0.068	14
o-Nitrophenol	0.028	13
p-Nitrophenol	0.12	29
N-Nitroso-di-n-butylamine	0.40	17
N-Nitrosodiethylamine	0.40	28
N-Nitrosomethylethylamine	0.40	2.3
N-Nitrosomorpholine	0.40	2.3
N-Nitrosopiperidine	0.013	35
N-Nitrosopyrrolidine	0.013	35
5-Nitro-o-toluidine	0.32	28
Parathion	0.014	4.6
Pentachlorobenzene	0.055	10
Pentachloronitrobenzene	0.055	4.8
Pentachlorophenol	0.089	7.4
Phenacetin	0.081	16
Phenanthrene	0.059	5.6
Phenol	0.039	6.2
Phthalic acid	0.055	28
Phthalic anhydride	0.055	28
Pronamide	0.093	1.5
Pyrene	0.067	8.2
Pyridine	0.014	16
Safrole	0.081	22
1,2,4,5-Tetrachlorobenzene	0.055	14
2,3,4,6-Tetrachlorophenol	0.030	7.4
2,4,5-Trichlorophenol	0.18	7.4
2,4,6-Trichlorophenol	0.035	7.4

VOLATILES:

CONSTITUENT	mg/l WW	mg/kg N/WW
Acetone	0.28	160
Acetonitrile	5.6	1.8
Acrylonitrile	0.24	84
Benzene	0.14	10
Bromodichloromethane	0.35	15
Bromoform(Tribromomethane)	0.63	15
Bromomethane/Methyl bromide)	0.11	15
n-Butanol (n-Butyl Alcohol)	5.6	2.6
Carbon tetrachloride	0.057	6.0
2-Chloro-1,3 butadiene	0.057	0.28
Chlorobenzene	0.057	6.0
Chloromethane (Methyl Chloride)	0.19	30
3-Chloropropylene	0.036	30
1,2-Dibromo-3-chloropropane	0.11	15
1,2-Dibromoethane (ethylene dibromide)	0.028	15
Dibromoethane	0.11	15
Dichlorodifluoromethane	0.23	7.2
1,1-Dichloroethane	0.059	6.0
1,2-Dichloroethane	0.21	6.0
1,1-Dichloroethylene	0.025	6.0
trans-1,2-Dichloroethylene	0.054	30
1,2-Dichloropropane	0.85	18
cis-1,3-Dichloropropylene	0.036	18
trans-1,3-Dichloropropylene	0.036	18
1,4-Dioxane	NA	170
Ethyl acetate	0.34	33

CONSTITUENT	mg/l WW	mg/kg N/WW
Ethyl benzene	0.057	10
Ethyl cyanide (Propanenitrile)	0.24	360
Ethyl ether	0.12	160
Ethyl methacrylate	0.14	160
Iodomethane	0.19	65
Isobutanol (Isobutyl alcohol)	5.6	170
Methacrylonitrile	0.24	84
Methylene chloride	0.089	30
Methyl ethyl ketone	0.28	36
Methyl isobutyl ketone	0.14	33
Methyl methacrylate	0.14	160
Naphthalene	0.059	5.6
Pentachloroethane	0.055	6.0
1,1,1,2-Tetrachloroethane	0.057	6.0
1,1,2,2-Tetrachlorethane	0.057	6.0
Tetrachlorethylene	0.056	6.0
Toluene	0.080	10
1,2,4-Trichlorobenzene	0.055	19
1,1,1-Trichloroethane	0.054	6.0
1,1,2-Trichloroethane	0.054	6.0
Trichloroethylene	0.054	6.0
1,2,3-Trichloropropane	0.85	30
Trichloromonofluoromethane	0.020	30
1,1,2-Trichloro-1,2,2-trifluoroethane	0.057	30
Vinyl chloride	0.27	6.0
Xylene-sum of mixed isomers	0.32	30

CHLORINATED HERBICIDES, ORGANOCHLORINE PESTICIDES, ORGANOPHOSPHORUS COMPOUNDS, INORGANICS AND PCB'S:

CONSTITUENT	mg/l WW	mg/kg N/WW
Aldrin	0.021	0.066
alpha-BHC	0.00014	0.066
beta-BHC	0.00014	0.066
delta-BHC	0.023	0.066
gamma-BHC	0.0017	0.066
Chlordane (alpha and gamma)	0.0033	0.26
o,p'-DDD	0.023	0.087
p,p'-DDD	0.023	0.087
o,p'-DDE	0.031	0.087
p,p'-DDE	0.031	0.087
o,p'-DDT	0.0039	0.087
p,p'-DDT	0.0039	0.087
2,4-D	0.72	10
Dieldrin	0.017	0.13
Disulfoton	0.017	6.2
Endosulfan I	0.023	0.066

CONSTITUENT	mg/l WW	mg/kg N/WW
Endosulfan II	0.029	0.13
Endosulfan sulfate	0.029	0.13
Endrin	0.0028	0.13
Endrin aldehyde	0.025	0.13
Famphur	0.017	15
Heptachlor	0.0012	0.066
Heptachlor epoxide	0.016	0.066
Methoxychlor	0.25	0.18
Total PCB's	0.10	10
Phorate	0.021	4.6
Toxaphene	0.0095	2.6
2,4,5-T	0.72	7.9
2,4,5-TP (Silvex)	0.72	7.9
Cyanides (Total)	1.2	590
Cyanides (Amenable)	0.86	30

METALS AND VOLATILES BY TCLP:

CONSTITUENT	mg/l WW	mg/l N/WW
Antimony	1.9	2.1
Arsenic	1.4	5.0
Barium	1.2	7.6
Beryllium	0.82	0.014
Cadmium	0.69	0.19
Chromium (Total)	2.77	0.86
Lead	0.69	0.37
Mercury	0.15	0.025
Nickel	3.98	5.0

CONSTITUENT	mg/l WW	mg/l N/WW
Selenium	0.82	0.16
Silver	0.43	0.30
Thallium	1.4	0.078
Vanadium	4.3	0.23
Zinc**	2.61	5.3
Methanol	5.6	0.75
Carbon disulfide	3.8	4.8
Cyclohexanone	0.36	0.75

DIOXINS AND DIBENZOFURANS:

CONSTITUENT	mg/l WW	mg/kg N/WW
Pentachlorodibenzo-furans	0.000035	0.001
Pentachlordibenzo-p-dioxins	0.000063	0.001
Hexachlorodibenzo-furans	0.000063	0.001

CONSTITUENT	mg/l WW	mg/kg N/WW
Hexachlorodibenzo-p-dioxins	0.000063	0.001
Tetrachlorodibenzo-furans	0.000063	0.001
Tetrachlordibenzo-p-dioxins	0.000063	0.001

** - Zinc is not an Underlying Hazardous Constituent requiring treatment in D001, D002, or D012-D043 wastes.

SECTION D

PROCESS INFORMATION

The information provided in this section is submitted in accordance with the requirements of Michigan Act 64, Rules 299.9614 and 299.9615 which incorporate the provisions of 40 CFR 264 Subparts I and J. This section discusses specific processes used by Dynecol, Inc. to treat and store hazardous waste in the hazardous waste bulk treatment tank and the container management areas. All process equipment and containment structures are also described in this section. Supporting information, calculations, drawings, material specifications, basis of design and process capacity summaries are located in Appendices D.1 and D.2.

D-1 CONTAINERS [40 CFR 264.170]

Dynecol, Inc. stores containers of hazardous wastes in a facility which is specifically designed for this type of hazardous waste storage. The containers that are stored in the facility are of various sizes up to and including large volume totes. The wastes are temporarily stored within the facility until they are transferred for off-site treatment and/or disposal or on-site treatment.

D-1a Description of the Container Management Facility

The hazardous waste container management facility occupies a centrally located area to the east of the bulk treatment facility and has a minimum fifty-foot set back from all property lines (refer to Drawing B.3 of Section B).

The 95-foot by 122-foot structure is designed to meet all applicable BOCA, NFPA, and NEC codes for storage of flammable liquid wastes, i.e., Class I, II, III liquids. All concrete walls are rated for 4-hour fire protection. The service and garage doors are 3-hour fire rated. Access to the building is limited to vehicles at the loading docks within the southeastern corner of the structure and the garage door at the south corner of the building, and to pedestrians at four locations along the north, southeastern, and south sides of the facility. The interior areas of the building are heated between 50 and 60 degrees F in the winter with 7400 cfm of air flow per NFPA standards, and are cooled by ventilation fan in the summer with an increased air flow of 10,000 cfm.

The container management facility consists of two loading docks, eight isolation storage bays, a waste bulking and transfer area, and a drum washing bay. The 32-foot by 60-foot loading/unloading area located in the southeastern corner of the facility is roofed but without side walls. Wall skirting is provided as a barrier against precipitation infiltration. Spill containment is provided in this area to contain any spills or leaks. The floor coating is acid, caustic, and organic resistant in the containment area as well as in the required section of the truck well area. The loading docks are equipped with truck bumpers, mechanical levelers, and access ladder.

The container storage area consists of eight, 19-foot by 21.5-foot isolation bays constructed from poured concrete designed to provide for the separate storage of incompatible or reactive wastes (see Drawing A.1 of Appendix D.1b). Each bay holds up to 120 drums

(6,600 gallons) on a maximum of two levels of pallets. Storage of the containers on pallets facilitates inspection of the container storage area for leaks. Aisle space is provided to facilitate the unobstructed movement of personnel, fire protection equipment, and spill control/decontamination equipment to any area of facility operation during an emergency. Containers with flammable wastes are placed no further than 12 feet from the main aisle. Each bay is constructed to contain a spill or leak of approximately 1,221 gallons (more than 10% of maximum stored volume). Each bay contains a blind sump that can be used to remove spilled wastes from the bay. The total floor surface area in each bay is constructed of concrete with a continuous chemical-resistant coating including the bottom eight inches of the walls separating the storage bays. The bay divider walls are six feet high to inhibit any releases from containers stored on the second level from exiting the storage bay.

The waste bulking and transfer area is used to consolidate small quantities of certain compatible wastes into containers and to bulk any containerized wastes into bulk tankers for transport off-site or treatment on-site. The bulking/transfer area and the drum washing bay are equipped with fume hoods which are connected to an air emission control system consisting of a blower (a minimum of 1,000 CFM) , two activated carbon vessels (a minimum of 1,800 pounds of carbon each), and a 5,000 CFM caustic scrubber. The bulking/transfer area is coated with a continuous chemical-resistant coating and provided with a blind sump for collecting any spills. Transfer of materials from the bulking/tranfer area to the tanker truck is achieved through three separate hoses with appropriate couplings; one each for acids, alkalines, and organics. Ventilation air within the bulking/transfer area is supplied at a rate of a minimum of 1,000 CFM whenever bulking is performed.

All electrical components within the container storage area are explosion-proof. A grounding system is installed in the bulking and transfer area to allow containers to be grounded during transfer operations. Electrical service lines and conduits are routed overhead with no conduits or wiring penetrating the walls of the storage bays. A separate room (the mechanical room) for the facility's controls is isolated from any potential explosion area since the equipment in this room is not explosion-proof.

Compressed air piping is a schedule 40 galvanized system with threaded joints and is supplied by an existing compressor in another on-site building.

Potable water supply to the storage facility is provided through a service main, metered according to the City of Detroit standard metering requirements. Interior water piping is schedule 40 galvanized steel pipe. Fire protection water supply to the sprinkler system is from an eight-inch water main. Below-grade piping is ductile iron while above-grade piping is schedule 40 galvanized steel. The fire protection for Bay #1 is a dry chemical system with standard heat detection and 6-50 pound dry chemical cylinders. The storage area and loading dock area is provided with a closed head foam/ water sprinkler system proportioned at 3% - 16 gallons design rate based on a maximum of 2000 square feet for a 15 minute run time with a bladder tank.

Short-term parking for vehicles that load or unload hazardous waste containers into or out of the storage facility is provided adjacent to the storage facility. All roof drains and site runoff are piped to storm sewers. The adjacent concrete areas to the building are sloped away from the building to direct drainage towards the site storm sewers.

D-1b Description of Containers [40 CFR 264.171 and 264.172]

The primary containment devices that are used to store hazardous wastes in the storage facility are 500-gallon totes, 55-gallon drums, or smaller containers that are lined as appropriate. Containerized hazardous wastes that are received by Dynecol may be consolidated after the compatibility of these wastes has been clearly determined. The contents of any container that is in unsatisfactory condition or incompatible with the container are promptly placed in compatible container in good condition.

All drums containing hazardous wastes are clearly and accurately labeled. Following waste bulking operations, the empty containers are generally rinsed, crushed, and taken off-site for disposal or recycling. Rinsates from container washing process are containerized for proper disposal. For containers holding non-hazardous wastes, a "Non-Hazardous Waste" label is affixed to the container to indicate its contents.

In the event that container repackaging is necessary due to container corrosion damage or leakage, an 85-gallon recovery (overpack) drum can be used to contain a leaking or potentially leaking drum.

D-1c Container Management Practices [40 CFR 264.173 & 264.174]

Hazardous containerized wastes destined for temporary storage at Dynecol are properly characterized to ensure that the wastes can be safely stored, and eventually transferred or bulked for outside disposal or on-site treatment. A detailed description of the compatibility testing procedures and characterization scheme is contained in Section C, Waste Characteristics. Rejected waste shipments are returned to the generator. Accepted containers are placed in storage where they will remain sealed until they are removed for shipment or bulking, unless unusual circumstances require that the drum be opened again.

Those waste shipments that are to be combined and transferred to other containers or are to be bulked into tankers are taken to the waste bulking area. In the event that the transfer is to another container, the newly filled container is appropriately labeled for further processing.

Incompatible and reactive wastes are segregated in separate storage bays. During storage, sufficient aisle space is maintained to provide unobstructed movement of personnel, fire protection equipment, and spill control/decontamination equipment to any area of facility operation during an emergency. Container labels face the aisle and are clearly visible. In order to detect spills or leaks and to prevent the containers from contacting any standing liquids, the containers are stored directly on top of pallets in good condition, no more than two stacked layers high. In addition, this drum stacking arrangement along with a six-foot high bay dividing wall prevent a punctured drum that has been elevated above the containment structure from overshooting the secondary containment system and contaminating areas outside of the storage bay.

The storage bays, waste bulking area, and loading/unloading areas regularly undergo routine inspections to detect any actual releases or any conditions that could result in a release. If the inspection identifies an unsatisfactory condition, such as an actual release or the potential for a release, remedial actions as specified in the Contingency Plan (Section G) will be promptly implemented.

When an off-site disposal facility has approved receipt of the containerized wastes, they are removed from the storage bay by trained Dynecol facility personnel, transferred to licensed vehicles, and manifested according to state and federal regulations.

D-1d Secondary Containment Systems [40 CFR 264.175]

A secondary containment system is provided for each of the eight storage bays, the waste bulking area, and the loading/unloading areas in the hazardous waste container management facility. These secondary containment systems are constructed of concrete and are free of cracks or gaps and sufficiently impervious to contain any leaks or spills until the release is detected. All floor surfaces, including the secondary containment structures, are covered with a continuous chemical-resistant coating.

Each of the eight container storage bays measures 19 feet by 21.5 feet and holds no more than 120 55-gallon containers. The bays are sloped to drain and remove liquids resulting from any leaks or spills. The approximated 1,221-gallon capacity of the storage bay exceeds the requirement for secondary containment to be able to contain 10% of the total maximum volume (6,600 gallons) of waste stored in the area. A blind sump is provided for each storage bay in order to facilitate the removal of spilled or leaked material from the bay. A portable air diaphragm pump can be used, if necessary, to pump out materials in the sumps. Routine inspections of these sumps identify when a release has occured and appropriate response procedures are then followed in removing this release from the secondary containment system.

The waste bulking/transfer area floor is covered with a continuous chemical-resistant coating and is provided with a blind sump for easy removal of spilled or leaked materials.

The secondary containment system for the facility's loading and unloading area consists of a blind sump located in the loading dock. Concrete chemical-resistant floors in this area are sloped toward this sump.

Run-on is prevented from entering the container management facility by the roof and walls of the building and by the adjacent concrete areas that are sloped away from the building to direct drainage towards the site's storm sewers.

The containment areas are inspected daily to detect any spills or leaks. If any accumulated liquids are detected, they will be promptly sampled, analyzed, characterized, and removed within 24 hours. These liquids will be placed in containers and stored in an appropriate bay for ultimate disposal.

D-1e Air Emission Control Systems

- Dynecol has installed and operates air control systems for all storage tanks, storage areas and bulking equipment in compliance with current Wayne County Air Quality Management Division permits.

- Wastes defined in 40 CFR 264.1050 are occasionally stored in Tank 28. The approved design, installation of equipment, air control systems, monitoring and record keeping required in the permit issued by WCAQMD complies with requirements of 40 CFR 264.1050 through 40 CFR 1065.

D-2 TANKS [40 CFR 264.190]

D-2a Description of Tanks

D-2a(i) Tanks After Closure of Certain Tanks

The hazardous waste treatment system at Dynecol has been designed to process 144,00 gallons per day of hazardous wastes. The processing and storage of these hazardous wastes take place in above-ground, corrosion resistant vessels. One tank (Tank #1) is available for storage of hazardous wastes prior to processing, with a capacity totaling 20,000 gallons. Treatment of listed hazardous wastes normally takes place in one 20,000 gallon capacity FRP tank (Tank #27). Primary treatment of characteristic wastes takes place in any of three 20,000 gallon tanks (tanks #2-#4). Secondary treatment of characteristic wastes takes place in any of four 20,000 gallon tanks. Primary treatment typically entails chemical oxidation, chemical reduction, and neutralization. Secondary treatment may include neutralization, chemical precipitation, flocculation, detoxification, clarification, sedimentation, chemical fixation, lime stabilization, and carbon adsorption. Table D.1 provides a summary of all regulated tanks (treatment and storage) as found subsequent to the planned closure of tanks #7 and #10. Listed below are descriptions of tanks to be found at that time. The horizontal 20,000-gallon primary treatment tanks (Tanks #2 through #4) are rubber lined, steel tanks measuring twenty-four feet long with a twelve-foot diameter. The vertical 20,000- gallon secondary treatment tanks (Tanks #18 through #21) are fiberglass reinforced plastic (FRP) with cone bottoms. The tanks measure 21 feet, eight inches high, with a twelve-foot diameter and are equipped with a six-inch bottom flange and 24-inch side and top manholes.

The treatment tank #27, a vertical 20,000-gallon FRP tank with cone bottom, is dedicated for the treatment of listed hazardous wastes. This tank measures 21 feet, eight inches high, with a twelve-foot diameter and is equipped with a six-inch bottom outlet and 24-inch top and side manways.

Tank #1 is a regulated hazardous waste storage tank. This is a horizontal 20,000-gallon rubber lined steel tank, measuring twenty-four feet long with a twelve-foot diameter.

Tank #28 is a regulated vertical 1,900 gallon stainless steel tank measuring 12 feet high with a 5.5 foot diameter. It is used in the bulking process in the container facility.

Tanks CV1 and CV2 are regulated 1,000 pound (each) carbon vessels used for any final effluent polishing, as necessary.

The storage tanks, Tanks #7, #8, #9, #10, #12, #13, #14, #16, #17, #22 through #26 are non-regulated tanks which serve in various roles of support for the treatment operation. A general description of their typical functions and sizes is as follows:

- Tanks #7 and #10 are vertical FRP tanks with capacities of 10,000 and 12,000 gallons, respectively. Tank #7 measures seventeen feet high with a ten foot diameter. Tank #10 measures 22 feet high with a 12-foot diameter. These tanks can be typically used to store recycled/reused products or non-hazardous waste streams.

- Tank #8 is a 20,000-gallon vertical FRP tank measuring 21 feet, eight inches high with a 12-foot diameter. This tank is typically used for runoff collection.

- Tanks #9 and #15 are each 27,600-gallon steel tank and are typically used to store liquid caustic soda (sodium hydroxide) or liquid caustic potash (potassium hydroxide) or any alkaline reagents prior to use in the waste treatment process. These tanks measure 24 feet high by 14 feet in diameter.

- Tank #14 is a 14,000-gallon steel tank, typically used to store lime slurry prior to use in the waste treatment process. The tank measures 12 feet high by 14 feet in diameter.

- Tanks #12, #13, #16, #17 are each 25,800-gallon vertical FRP tanks measuring 35 feet high with an 11-foot diameter. These tanks are typically used to store recycled/reused products or non-hazardous waste streams.

- Tank #22 is a 1,000 gallon vertical FRP tank measuring eleven feet, six inches high, with a four-foot diameter and possessing an overflow nozzle. This tank is located in the lower level of the filter press building and is typically used as a mild acid cleaning solution holding tank for the filter presses.

- Tank #23 is a 6,000-gallon tank, and typically used to store lime slurry. It measures 16 feet high, with an 8-foot diameter.

- Tank #24 is a 6,000-gallon carbon steel tank measuring 16 feet high with an 8-foot diameter. It is typically used as a holding tank for storing city water as needed for facility usages.

- Tanks #25 and #26 are vertical 50,000-gallon/each carbon steel tanks measuring 60 feet high with a 12-foot diameter and cone bottom. The tanks are used to store dry lime or other reagents.

Tanks #30 and 31 are regulated vertical 15,000-gallon/each carbon steel tanks measuring 24 feet high with a 10-foot diameter. They are typically used to hold effluent for quality control before discharge to the City of Detroit sewer.

D-2a(ii) Tanks Prior to Closure of Certain Tanks

Table D.1 provides notations to indicate all regulated tanks (treatment and storage) found prior to the planned closure of tanks #7 and #10. The following tank descriptions are different from those found in D-2a(i) and are applicable until #7 and #10 are closed:

Tank #1 is a horizontal 20,000-gallon primary treatment tank similar to tanks #2 - #4 described in D-2a(i).

Tanks #7 and #10 are vertical FRP tanks with capacities of 10,000 and 12,000 gallons, respectively. They are typically used to store hazardous waste.

Tank #27 is a vertical 20,000-gallon FRP tank that is used to store reagents used in the treatment process or to store/treat certain non-hazardous wastes.

D-2b Tank Corrosion and Erosion [40 CFR 264.192 (a) (3) (ii)]

The characteristics of tank construction and lining materials for all tanks are compatible with stored materials, treatment reagents, and hazardous wastes to reduce the effects of tank corrosion and erosion. The primary treatment tanks (#'s 2-4) and the hazardous waste storage tank (#1) are lined with either natural or Hypalon rubber as a corrosion resistant barrier. The secondary treatment tanks (#'s 18-21) and the listed wastes treatment tank (#27) are constructed with fiberglass reinforced plastic (FRP) materials.

D-2c Hazardous Waste Treatment Operations

The waste treatment processes undertaken at Dynecol include primary treatment, secondary treatment, solids dewatering and carbon adsorption. These treatment processes result in the detoxification of the water contained in the initial solutions, stabilization of toxic constituents, and the fixation of the constituents into a solid mass that is reduced in volume and is safer to handle and properly dispose of. The following discussion describes the handling procedures for hazardous wastes which are stored and processed in tanks at the Dynecol facility.

D-2c(i) Delivery and Receipt of Materials

Hazardous wastes are delivered to the treatment and container storage areas in bulk trailers and containers. Vehicles arriving at the facility are unloaded only within designated areas in the plant which are provided with spill control structures and equipment to contain spills or leaks. Prior to unloading a shipment of hazardous waste, the accompanying manifest and land disposal restriction notification are inspected, and a sample of the tanker's or container's content is fingerprinted to verify that the waste received is the same as described on both the accompanying manifest and the waste characterization report on file at the facility (see Waste Analysis Plan). The contents of the tanker are either removed by pressurization of the tanker with air or by a pump system. Containers are unloaded with fork lifts and drum handlers.

D-2c(ii) Storage of Hazardous Wastes Prior to Treatment

One storage vessel, designated for hazardous wastes, may receive the incoming waste material. This hazardous waste storage vessel, identified as Tank #1, can be used to store hazardous waste until a primary treatment vessel becomes available to process the waste, normally within less than 24 hours.

D-2c(iii) General Description of Treatment Methods

D-2c(iii) (a) Primary Treatment

Primary treatment processes are batch rather than continuous, and typically entail chemical oxidation, chemical reduction, adsorption, coprecipitation initiation, and neutralization. Chemical oxidation can be achieved either through air injection at a pressure of 30 pounds per square inch (psi) or through the addition of chemical reagents and proper agitation with air sparger/mechanical mixer.

Chemical reduction is required whenever hexavalent chromium is present in a waste stream. Wastes containing hexavalent chromuim are first processed to chemically reduce the hexavalent state to a trivalent one. Hexavalent chromium, when placed in an aqueous solution containing excess acid and ferrous ion or sodium bisulfite, is reduced to the trivalent oxidation state. The trivalent chromium can then be readily precipitated in the secondary treatment process.

Organic adsorption can be performed through the addition of powdered activated carbon to the treatment vessel. Adsorption is a relatively rapid process when conducted under a strong mixing condition, i.e., air sparging or mechanical agitation.

Chemical coprecipitation of toxic metals during the secondary treatment process can be initiated, if necessary, during the primary treatment process by the addition of recycled/reused reagents such as ferrous sulfate, ferrous chloride, or ferric chloride to the waste stream being processed.

Oxidation/reduction/adsorption can then be followed by neutralization in the primary treatment process. Acidic solutions are treated with various alkaline solutions, such as sodium hydroxide solution or lime slurry, to a pH of about 5.0.

The primary treatment procedures are typically as follows:

- pumping treatment reagents to a designated process vessel;
- agitating the waste and reagent mixture using air sparer/mechanical agitator which is provided for each vessel;
- providing adequate retention time to allow the reaction mixture to equalized at a pH of $\pm$ 5.0.

D-2c(iii)(b) Secondary Treatment

The secondary treatment processes are batch rather than continuous, and normally include neutralization, chemical precipitation, flocculation, detoxification, clarification, sedimentation, chemical fixation, and lime stabilization. Treatment reagents used in the secondary treatment step include lime slurry or other alkaline solutions. This process detoxifies the original solution by removing the toxic heavy metals from the liquid phase, and stabilizing them in a solid phase.

The secondary treatment process is carried out by the addition of lime slurry or other alkaline solutions, and by thoroughly agitating the waste and reagent mixture with mechanical mixers which are present on the vessel. The process is concluded when the appropriate pH is obtained to precipitate the inorganic constituents.

The lime or alkaline solutions that are added during the secondary treatment process react with the heavy metals to form metal hydroxides which are insoluble and will then precipitate from solution. Once precipitated, the heavy metals are no longer dissolved in the aqueous phase, and the liquid portion is detoxified. The precipitated heavy metal hydroxides are encapsulated and chemically fixed in a matrix of excess lime, iron hydroxide and other inert, non-hazardous solid materials. The excess lime, which will remain in the solid state through subsequent processing and disposal, will stabilize the resulting dewatered sludge.

Iron salts introduced, if necessary, during the primary treatment process in the form of either ferrous sulfate or ferrous/ferric chloride can facilitate coprecipitation of certain heavy metals during the secondary treatment process. These iron salts can also enhance the chemical fixation of the toxic metals and act as the primary flocculant for sludge conditioning/dewatering.

D-2c(iii)(c) Dewatering

In the final step of processing, treated wastes from the secondary treatment process are dewatered and fixed by pressure filtration. Pressure filtration compresses the material into a solid mass which typically contains about 40-60% solids. In this final form, the toxic components which were present in the initial solutions are tightly bound in the solid mass. The stabilized, fixated and dewatered solids resist leaching of toxic heavy metals/organics from the solid mass during acid extraction testing. Prior to disposal of the dewatered solids off-site, the solids are periodically sampled and tested for hazardous waste characteristics (see Section C).

There a two recessed chamber filter presses (A and B) on site for the dewatering of characteristic/listed wastes. Each filter press has a processing capacity of about 167 cubic feet of dewatered sludge per cycle. A third filter press (C) that has a processing capacity of 100 cuft per cycle and is normally used to dewater the Other Listed Wastes can also be used to dewater listed-filtercake-generating characteristic wastes and the listed wastes (except K062). These presses are located on the second floor of a two-story building, with the first floor used to receive solid transport vehicles. A precoat system can be used for any of the filter presses by the injection of a solution of diatomaceous earth, activated carbon or other precoat material at the beginning of the dewatering operation.

The dewatering and filtration process is carried out in batches staggered among any of the filter presses. After the secondary treatment is complete, the treated waste is pumped to a filter press by means of air diaphragm pumps. The completion of the filtration cycle is indicated by the feed pump discharge whenever a pressure of about 90 psi is reached and no more liquid can be pumped. The filter press is then opened, and dewatered sludge is allowed to fall into the solid transport vehicle located directly below each filter. The dewatered sludge is recycled or sent to an alternate disposal facility for further treatment or shipped to an appropriate landfill for ultimate disposal in accordance with all provisions of 40 CFR 268.

The solid transport vehicle area below the filter presses is cleaned daily and additionally as necessary to prevent the track-out of sludges. Wash waters are collected in the sump and reprocessed through the treatment system.

D-2(c)(iii)(d) Effluent Management

Treated effluent from the dewatering process is discharged to the Detroit wastewater treatment facility in accordance with discharge permit requirements. This effluent is exempt from hazardous waste regulations under the domestic sewage exclusion in 40 CFR 261.4.

Treated effluent from the filter press may be subjected to carbon adsorption. This can be performed by routing the effluent from either tank #30 or #31 through a system composed of an in-line filter and two 1,000-pound carbon vessels in parallel. Other polishing technique/method may be required to stay current with discharge requirements.

Treated effluent is collected in two retention tanks (#'s 30 and 31) for final quality control before discharge to the sewer system.

D-2c(iv) Procedures for characteristic/listed wastes

The treatment procedures for characteristic wastes (corrosives, TC metals, TC organics, and Michigan waste codes 001D and 003D) and listed wastes (K062, K157, F006 and F019) are as follows:

- After fingerprint verification, the hazardous wastes are transferred into one of three 20,000-gallon primary treatment vessels. Air emissions from these tanks are vented through a control system. Air emissions from Tank #3 (vessel dedicated for the receipt and treatment of certain TC organics) can be directed through a separate control system composed of a caustic scrubber vented to the existing carbon adsorption system in the container management facility.

- The wastes will then be typically subjected to primary treatment and secondary treatment processes, as described in sections D-2c(iii)(a) and (b), respectively.

- After secondary treatment, the treated waste is dewatered through one of the three filter presses, i.e., A thru C, as appropriate under other permit conditions.

- In case of a listed wastes K157, F006 and F019, proper decontamination of process tankage and equipment used in the treatment will be performed by running a non-listed or non-listed-filtercake-generating waste through all tankage, piping, and dewatering equipment (press A or B only). Dewatered solids from the decontamination process are collected and handled in the same manner as the solids from the wastes which originated the decontamination requirement.

D-2c(v) Procedures for listed wastes/Other Listed Wastes

The treatment procedures for the Other Listed Wastes (See Section C) and occasionally the listed wastes K157, F006 and F019 or listed-solids-generating characteristic wastes are as follows:

- After fingerprint verification, the hazardous wastes are transferred into tank # 27. Air emissions from this treatment tank are vented to a control system.

- The waste will then be typically subjected to primary and secondary treatment processes, as described in sections D-2c(iii)(a) and (b), respectively.

- Upon completion of the treatment processes, the content of the treatment vessel is pumped to Filter Press C by means of air diaphragm pumps.

- Dewatered solids are characterized as listed wastes and will carry all waste codes that are applicable to the wastes treated in the particular batch. These solids are either sent to an alternate disposal facility for further treatment or disposed of appropriately.

- The specific area below the Filter Press C is isolated by a concrete berm and a separate sump collection system. This area is cleaned after completion of each batch. Residues from this process or containerized for proper disposal.

D-2d Air Emission Control Systems

- Dynecol has installed and operates air control systems for all treatment and storage tanks in compliance with current Wayne County Air Quality Management Division permits.

- The current processes permitted for the treatment of hazardous waste at Dynecol do not include any processes identified in 40 CFR 264.1030. Specifically, the air sparging of hazardous wastes which occurs in the Primary Treatment system is designed only to maintain a homogenous solution within the tank. All organic wastes are treated through chemical reactions or physical treatment as defined in D-2c(ii)(a) of this section.

D-2d Tank Management Practices [40 CFR 264.194(b)]

Various operating practices and controls are implemented by Dynecol to prevent overfilling. Waste material is transferred from the primary treatment tank to a designated secondary treatment vessel, or as with the Other Listed Hazardous Waste, processed directly to the filter press through a piping system and the use of an air diaphragm pump. Each treatment tank has its own pipeline with fittings and valves properly labeled, and is provided with one or more of the following equipment and devices for monitoring and controlling safety cut-off during material flows: level switch, pneumatic activated valve with manual override and limit switches, manual valve, and solenoid valve. All treatment tanks are vented to an appropriate air control unit.

In the primary treatment tanks, a high-level sensor control activates/deactivates the solenoid control valve on the compressed air piping system. Since compressed air is typically used to off-load tankers to primary tanks, this control system will automatically prevent the overfill of the primary tanks.

Secondary tanks are equipped with two high-level sensors. The first, set at about 8,250-gallon level, will automatically shut off the transfer pump from the primary tank system. A second high-level sensor will activate an audible alarm at the 17,600- gallon level. Additionally, common valves and pipes are designed so that material flows cannot cross over. An alarm will sound whenever a sequence of events is not followed during material transfer.

The procedure for off loading wastes into the listed waste treatment system is the same as defined for off loading wastes into the standard treatment system (Tank #'s 2-4). Tank #27 (20,000 gallon capacity) is also equipped with two high level sensors, the first one set at about 8,250-gallon level and the second one at approximately 17,600 gallon level.

The hazardous waste storage tank #1 is provided with a high-level sensor that will activate/deactivate a solenoid control valve on the compressed air piping system. Since pressurization by air of tankers is typically used for off-loading, this device will automatically prevent the overfill of the storage tank.

TABLE D.1
SUMMARY DESCRIPTION OF REGULATED TANKS

TANK NUMBER	VOLUME (gallon)	DIMENSION	CONSTRUCTION MATERIALS	USAGE	DATE INSTALLED	FEED SYSTEM	SAFETY CUTOFF	BY-PASS	SHELL THICKNESS	PRESSURE CONTROL
1	20,000	12'D x 24'L	RUBBER LINED STEEL	STORAGE**	1976	FLEX HOSE	HIGH-LEVEL CONTROLS SOLENOID VALVE	OVERFLOW TO SECONDARY CONTAINMENT	0 240"	VENT TO SCRUBBER
2	"	"	"	PRIMARY TREATMENT	"	"	"	"	"	"
3	"	"	"	PRIMARY TREATMENT	"	"	"	"	"	"
4	"	"	"	PRIMARY TREATMENT	"	"	"	"	"	"
7	10,000	10'D x 17'H	FRP	STORAGE	1991	"	HIGH-LEVEL ALARM	"	0 495	"
10	12,000	12'D x 14'	"	"	1984	"	"	"	0 255" MINIMUM	
18	20,000	12'D x 22'L	FRP	SECONDARY TREATMENT	1985	CPVC	HIGH-LEVEL CONTROLS TRANSFER PUMP	"	0 495	"
19	"	"	"	"	"	"	"	"	"	"
20	"	"	"	"	"	"	"	"	"	"
21	"	"	"	"	"	"	"	"	"	"
27	"	"	"	LISTED WASTE TREATMENT	1997*	"	"	"	"	"
28	1,900	5.5'D x 12'H	SS	STORAGE	1992	FLEX HOSE	BALL FLOAT VALVE	OVERFLOW TO SURGE TANK	0.187"	RELIEF VALVE
30	15,000	10'D x 22'H	STEEL	EFFLUENT	1993	STEEL	HIGH-LEVEL ALARM	OVERFLOW TO SECONDARY CONTAINMENT	0 24	VENT TO ATMOSPHERE
31	"	"	"	"	"	"	"	"	"	"
CV1	1,000 LBS. CARBON	6'D x 6 5'H	PVC LINED STEEL	TREATMENT	1990	CPVC	N/A	N/A	0 25	RELIEF VALVE
CV2	"	"	"	"	"	"	"	"	"	"

D = diameter, L = length; H = height
SS = stainless steel
FRP = fiberglass reinforced plastic
CPVC = chlorinated polyvinyl chloride
* Tentative date only. Pending Act 451 Permit approval and closure of Tank #7 and #10
** Primary Treatment prior to Closure of Tank #7 and #10

D-2e Hazard Potential [40 CFR 264.199]

D-2e(i) Potential for Waste Material to Generate Extreme Heat during Processing

No extreme heat is generated during the processing of waste materials handled at this facility. Heat is generated in primary treatment due to neutralization reaction. In the typical extreme case, a waste containing 15 percent HCl neutralized with a solution containing 50 percent NaOH would result in a temperature rise of 44 degrees F. A typical extreme situation in the neutralization of spent acids is the reaction of a 25,800 gallons batch of solution having a concentration of acid of 15 percent HCl and using 50 percent NaOH solution as the treatment reagent. Temperature rise is determined, as shown below, for these concentrations of acid solutions:

Acid Type	**H2SO4**	**HCL**	**HNO3**
Acid concentration	15%	15%	15%
Total volume of acid solution (gal)	25,800	25,800	25,800
Weight of solution (10#/gal)	258,000#	258,000#	258,000#
Weight 100% acid	38,700#	38,700#	38,700#
Total weight of solution	331,200#	331,200#	331,200#
Weight of 50% NaOH (12#/gal)	165,600#	165,600#	165,600#
Weight of mixture	589,200#	589,200#	589,200#
Heat of reaction(million BTU)	18.62	25.7	15.09
Change in Temp* (deg F)	37.5	43.6	25.6

*Temperature rise from ambient temperature

D-2e(ii) Potential for Waste Material to Generate Extreme Pressure

No extreme pressure is generated during the processing of waste materials handled at this facility. Neither the waste materials nor the treatment reagents react to form gases as products of the reaction. Temperature increases during reaction may produce some water vapor, but the boiling temperature of the waste materials is never approached. The tanks in which treatment takes place are always maintained at atmospheric pressure due to venting to a air control system.

D-2e(iii) Potential for Waste Material to Produce Fire or Explosion

There is no potential for the waste materials, treatment reagents, or products of any reactions to be flammable or explosive in the tanks.

D-2e(iv) Potential for Waste Material to Produce Violent Reactions

There is no potential for the waste materials or treatment reagents to produce violent chemical or physical reactions in the tanks.

D-2e(v) Potential for Waste Material to Produce Uncontrolled Toxic Mists, Fumes, Gases or Dusts in Sufficient Quantities to Threaten Human Health

There is no potential for the waste materials or treatment reagents to produce uncontrolled toxic dust at this facility.
Dry lime is stored in silos and slurried with water within a silo building. The silo and handling building is provided with induced draft ventilation and dust is removed from air exhausted to the atmosphere by baghouse air filtration.

Mists containing hazardous waste fumes or gases could be generated during the transfer of raw waste materials from incoming tankers into primary treatment tanks and during aeration of the primary tanks. Any mists, fumes or gases which may be generated at these particular times are vented into the caustic scrubber/condenser. The scrubber/condenser prevents any of these materials from being discharged to the atmosphere. Secondary processing and solids dewatering do not produce any mists, fumes or gases.

In the very unlikely event of massive spill of hazardous wastes, a spray may be generated for a brief period of time while the material is impacting the floor of the facility containment area or unloading pad or driveway. In a worst-case situation, a massive spill of hydrochloric acid at 104 degrees F and 15% HCl concentration could emit HCl into the atmosphere at concentrations exceeding the ceiling limit exposure to HCl of 5.0 ppm. In response to a spill of this magnitude, the employees would implement the Contingency Plan as identified in Section G.

Because the vapor pressures of both sulfuric and nitric acids are much less than the vapor pressure of HCl, massive spills of these materials would pose no air quality problems for employees or the general public.

The vapor pressure of hydrochloric acid at 40 degrees C and 15% concentration is 0.184 mmHg. The concentration of HCl in air immediately above and in equilibrium with this HCl solution is:

$$0.184 \text{ mmHg}/760 \text{ mmHg} = 2.4\text{E-}4 \text{ mole HCl/mole air}$$
$$= 240 \text{ ppm of HCl}$$

Note that the concentration of HCl would theoretically equal this value in a very thin layer of air above the solution. Dilution with air above this thin layer will result in HCl concentration at breathing level, about five feet above the spill, to be much less than the theoretically calculated concentration.

D-2e(vi) Potential for Waste Material to Damage the Structural Integrity of a Vessel

There is little potential for waste material or treatment reagents to damage the structural integrity of the vessels used to store or treat the hazardous wastes processed at this facility. All vessels are either constructed of or lined with corrosion-resistant materials. Materials handled at the facility and placed in tanks will not react with or otherwise damage the integrity of the tanks.

D-2f Unloading Procedures for Incompatible Wastes [40 CFR 264.199]

Occasionally there are needs for blending different waste streams together in order to get the most efficient usage of treatment reagent(s) and/or a satisfactory filtercake consistency. Blending of wastes will be done in accordance with specific predetermined written treatability instructions. Additionally, to prevent incompatible wastes from coming in contact in the same tank with a heel of a previously treated waste, the following procedure is used. The procedure affects only the primary treatment system because a tank heel is not a factor for the secondary treatment tanks (#'s 18-21) and the listed wastes treatment tank (#27) since they are cone-bottomed and all discharges are via a bottom drain.

1. For strong acids and alkalis: If a strong acid (pH <2) is to be unloaded into a primary treatment tank which was previously used to treat a strong alkali waste, the tank heel is evaluated to see if there will be any adverse reactions that result from the mixing of the wastes. If necessary, the heel will be treated by adding acid until a pH of less than 8.0 is achieved.

If a strong alkali waste (pH >12) is to be unloaded into a primary tank which was previously used to treat a strong acidic waste, the heel will be evaluated to determine if there will be any adverse reactions resulting from the mixing of the wastes. If necessary, the pH of any remaining heel will be treated by adding lime slurry until a pH greater than 6.0 is achieved.

2. For ammonia containing wastes: prior to unloading an ammonia containing waste, the tank heel is evaluated to determine whether there will be any adverse reactions resulting from the mixing of the wastes. If necessary, the pH of any remaining heel will be adjusted to a pH less than 7.0.

3. For chlorine containing wastes: prior to unloading a chlorine containing waste, the tank heel is evaluated to determine if there will be any adverse reactions from the mixing of the wastes. If necessary, the pH of any remaining heel will be adjusted to a pH greater than 7.0.

4. For sulfide/sulfite containing wastes: prior to unloading a sulfide/sulfite bearing waste, the tank heel is evaluated to determine if there will be any adverse reactions from the mixing of the wastes. If necessary, the pH of any remaining heel will be adjusted to a pH of 7.0 or higher.

Specific treatment and unloading procedures are defined for each waste stream prior to acceptance for treatment at this facility. The waste approval record and treatment procedures are maintained on file for future reference by operating staff.

D-2g Containment and Detection of Releases [40 CFR 264.193]

Concrete dike walls completely surround the treatment and storage tanks, providing secondary containment capacity of 150% of the volume of the largest tank within the area. The three 20,000- primary treatment vessels (#2, #3, and #4) along with the 20,000-gallon hazardous waste storage tank (#1) are located within a concrete diked structure that provides secondary containment for 100,159 gallons (five times the capacity of the largest tank).

The four 20,000 gallon secondary treatment tanks are located within a building with concrete secondary containment of 32,948 gallons (more than 150% of the volume of the largest tank). The Other Listed Hazardous Waste treatment tank and the current hazardous waste storage Tanks #7 and #10 are located in Building #2 which has concrete secondary containment capacity of 102,182 gallons (more than 150% of the capacity of the largest tank).

Appendix D-2d contains illustration, dimensions and calculations of the secondary containment structures that are provided for the treatment and storage tanks at Dynecol.

D-2h Tank Assessments

Six tanks described in Section D-2 have been newly installed since the previous license issue on May 2, 1990. Tank #28, installed in early 1992, was part of a complete review by MDEQ of the final design and construction criteria of the container facility, prior to operational approval and facility start -up in May of 1992.

Tanks #30 and 31, CV!, CV2, as well as Tank #27, require full assessments and will be completed per the following compliance schedule:

Tank Compliance Schedule

Activity	Compliance Date
Tanks #30 and 31 (Secondary Containment and Leak Detection Only	
1. Conceptual design	9/1/97
2. Final engineering drawings	11/1/97
3. Construction and installation	2/1/98
4. Tank assessment	4/1/98
Tank #27	
1. Conceptual design	Complete
2. Final engineering drawings	Permit Issue + 6 Months
3. Construction and installation	Permit Issue + 7 Months
4. Tank assessment	Permit Issue + 9 Months
Tanks CV1 and CV2	
1. Conceptual design	Complete
2. Final engineering drawings	Complete
3. Construction and installation	Complete
4. Tank assessment	4/1/98

SECTION E

HYDROGEOLOGICAL INFORMATION

This section describes the groundwater monitoring systems that are provided at the Dynecol facility in accordance with Subpart F of 40 CFR 264 and Michigan Act 64 R 299.9612(1)(b).

E-1 INTRODUCTION

Dynecol, Inc., a commercial hazardous waste treatment and storage facility located in Detroit, Michigan (Figure E.1), operates a container management facility and a hazardous waste bulk treatment facility. The container management facility receives, transfers, and stores hazardous wastes in containers of various sizes and in bulk. These wastes are temporarily stored at the facility prior to being transported to off-site treatment or disposal facilities or bulked and treated on-site. The bulk treatment facility receives aqueous solutions containing acids, alkalis, heavy metals, and some organic constituents. This facility also receives listed wastes and Other Listed Wastes as referenced in Section C. The treated effluent is discharged to the City of Detroit sewerage system. Any sludges resulting from the treatment process are recycled or disposed of in either a hazardous or solid waste landfill. One storage tank is used as necessary for bulk hazardous waste storage prior to treatment.

All treatment and storage of bulk hazardous wastes at Dynecol's treatment plant are performed in tanks. These tanks rest upon concrete slabs and are contained within concrete secondary containment structures. Description of secondary containment is provided in Section D, Process Information. Truck unloading at the treatment plant takes place on an unloading pad which is coated with chemical resistant materials, and provided with secondary containment of approximately 22,000-gallon capacity.

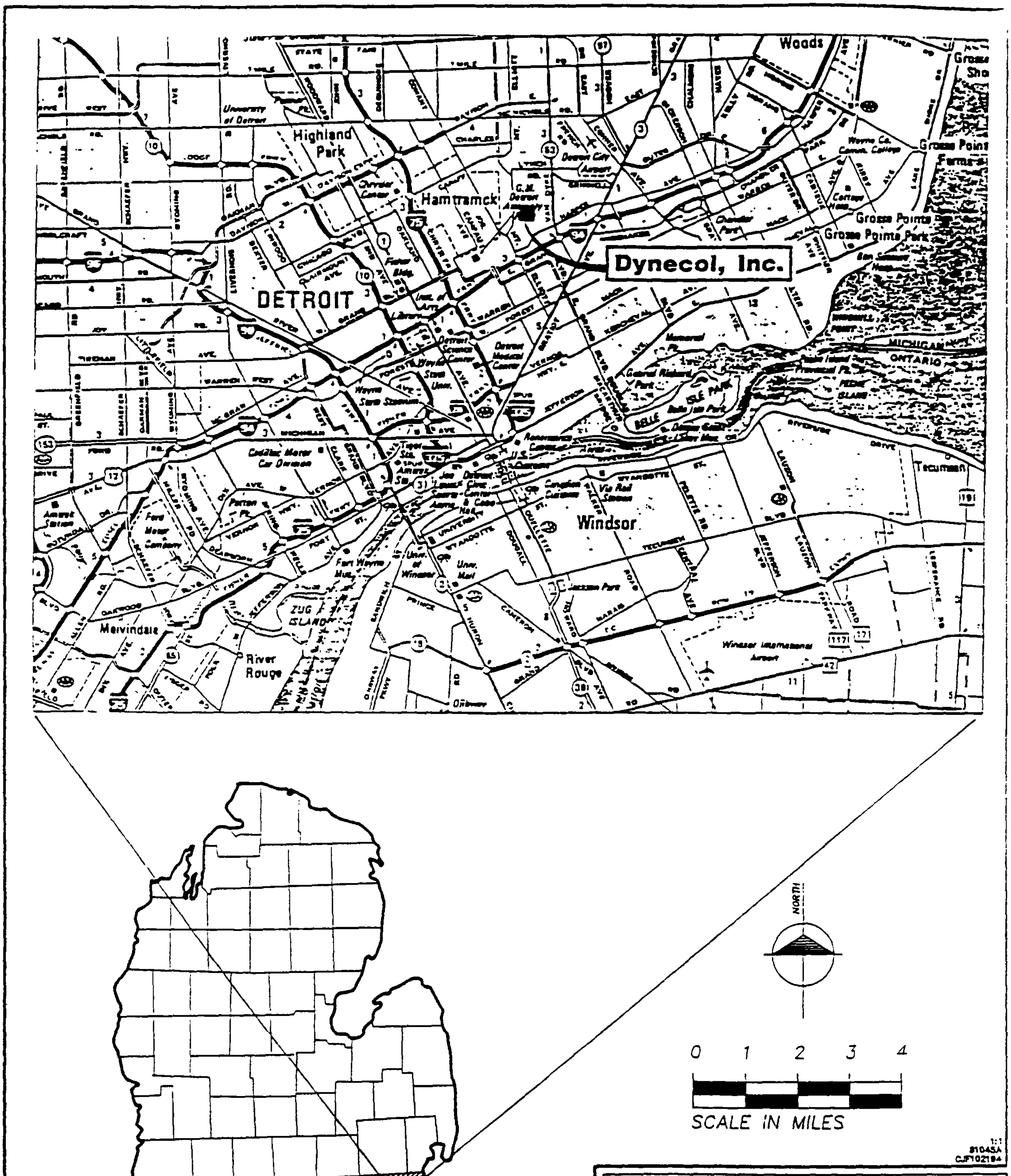
The container management facility consists of two loading docks, eight isolation bays, a waste bulking and transfer area, a drum washing bay, and a 1,900-gallon permitted storage tank (#28). The facility is designed to contain any spills or leaks from containers and to prevent any rain or run-on from entering the facility.

E-1a Site Location

The Dynecol facility occupies about 2.0 acres of land in the SE 1/4 of the SW 1/4 of Section 21, Township 1S, Range 12E, Wayne County Michigan (Figure E.3). This site is located approximately one mile east of Hamtramck, Michigan in a mixed residential and industrial area (Figure E.4). A more thorough description of the land use in the surrounding area can be found in Section J, Environmental Assessment.

E-1b Summary of 1981 and 1983 Groundwater Investigations

Four soil borings were drilled at Dynecol, Inc. by a consultant in July 1981. This work was conducted in an attempt to locate the uppermost aquifer beneath the site and to define the depth



FIGURES B.1, E.1, J.1

SITE LOCATION MAP

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994

81045

EARTH TECH
14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

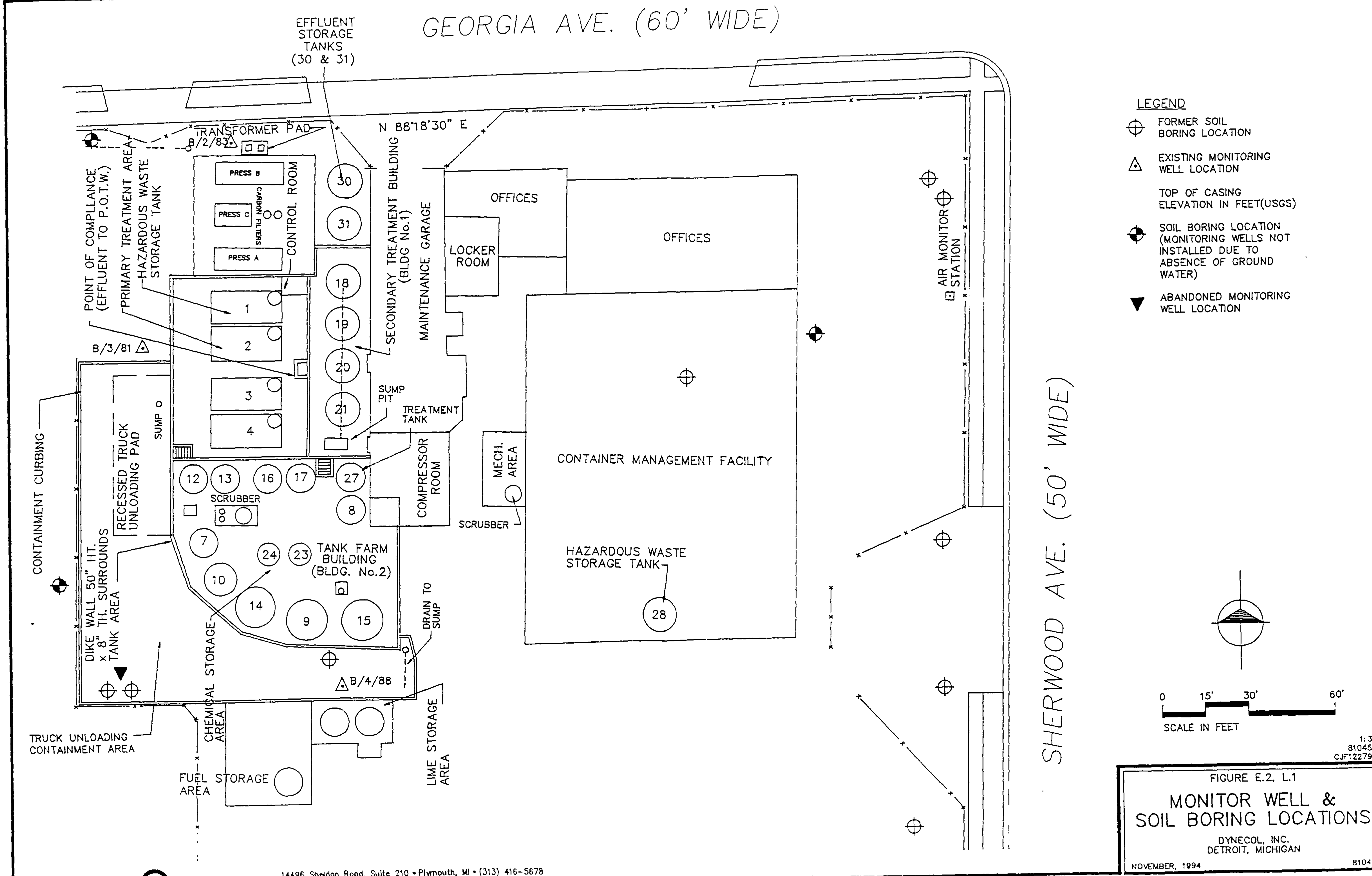


FIGURE E.2, L.1

MONITOR WELL & SOIL BORING LOCATIONS

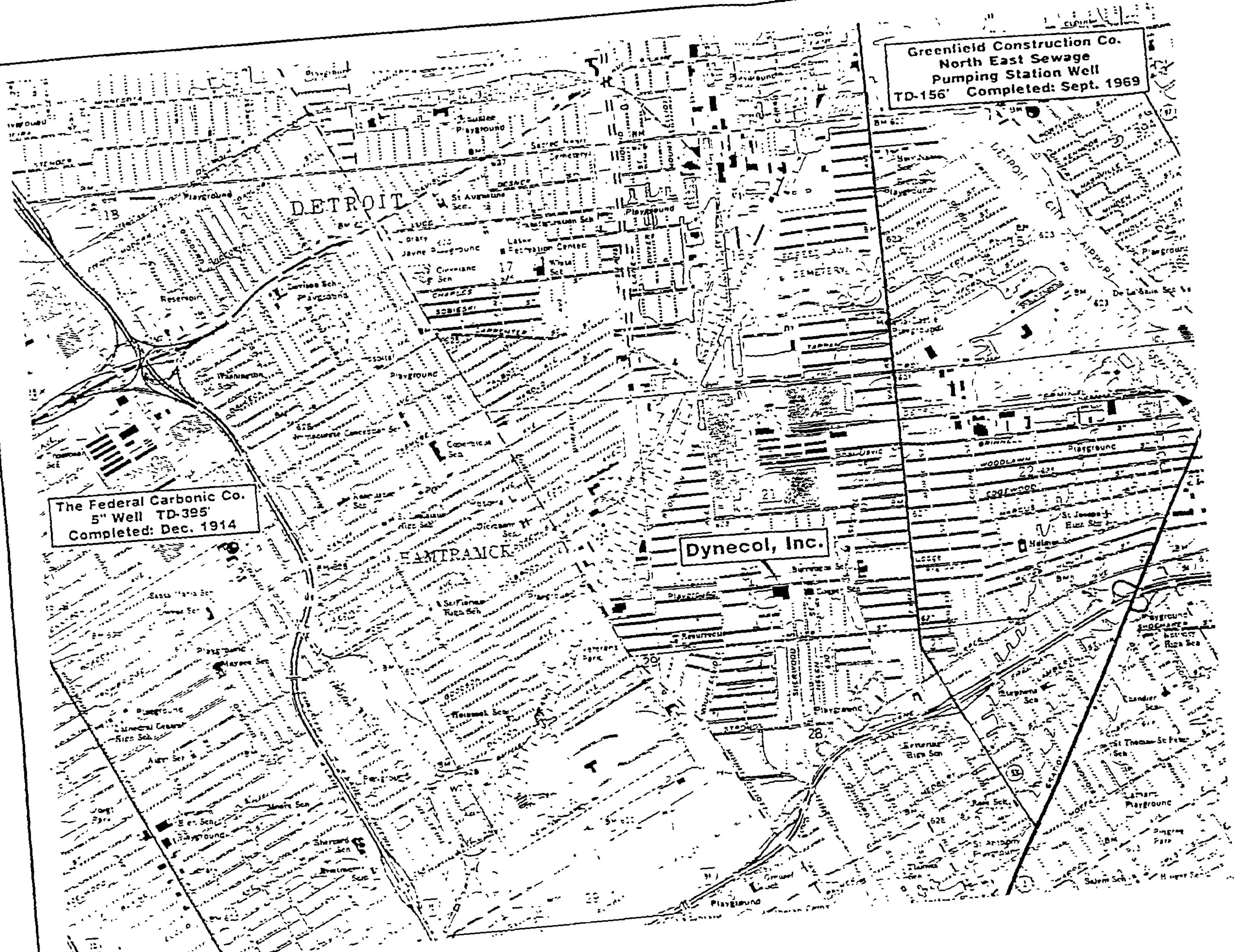
DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994

81045

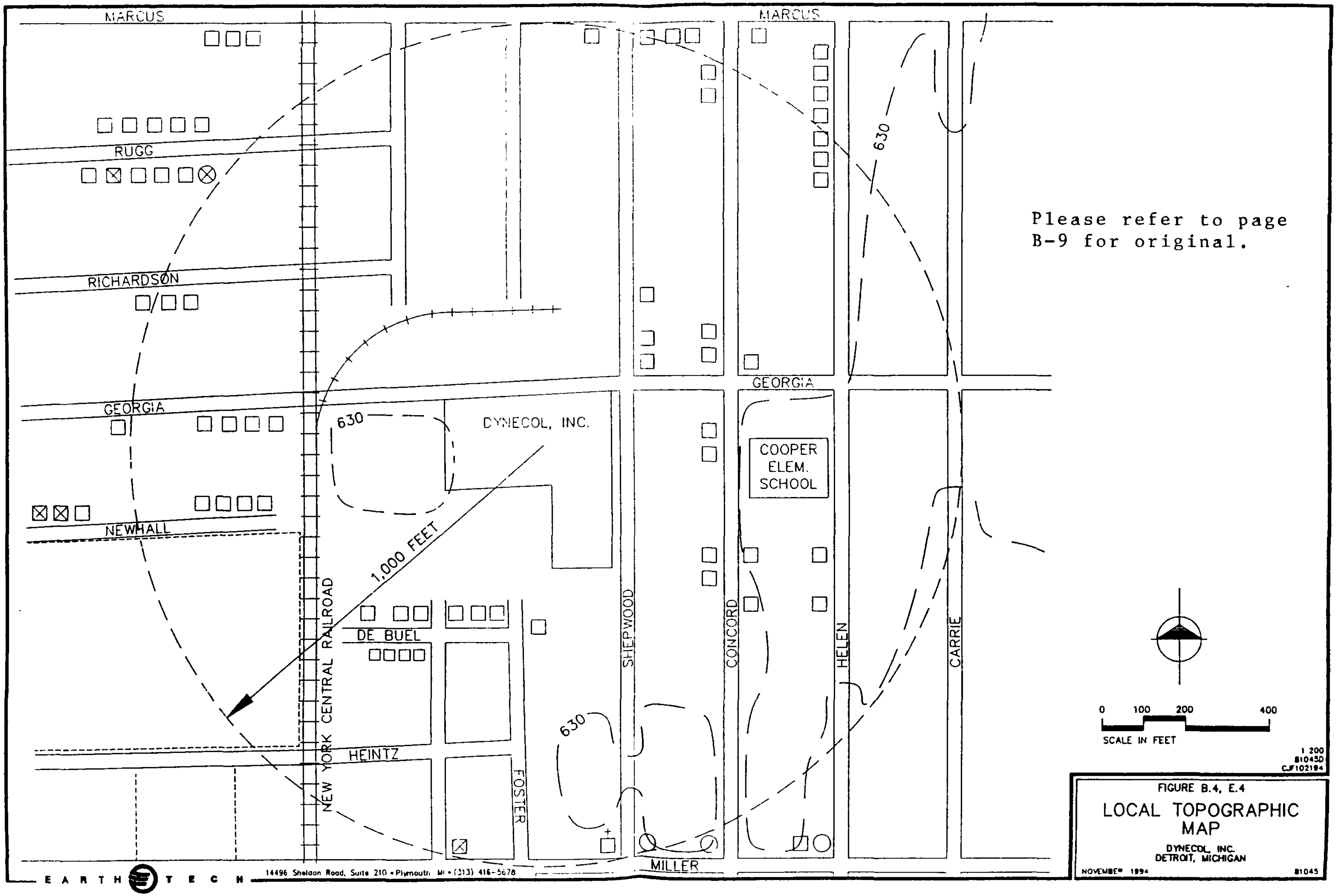
EARTH TECH
14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

Please refer to page B-5 for original.



0 1000' 2000' 4000'
SCALE IN FEET

FIGURE B.2, E.3
REGIONAL TOPOGRAPHIC MAP
DYNECOL, INC
DETROIT, MICHIGAN



Please refer to page B-9 for original.

and nature of the perched water intervals. Three (3) of these borings were advanced to a depth of 36 feet, and one (1) was advanced to a depth of ten feet. A summary of soil boring specifications is provided in Table E.1.

Soil boring B-3-81 was converted to a monitoring well (B-3) in July 1981. The well was constructed with two-inch diameter PVC casing and a bronze well point, with the screened interval set at a depth of 16-19 feet below grade. The well presently has a four-inch galvanized steel surface casing (installed in the summer of 1984 to accomodate the pouring of concrete over the area) fitted with a flush mount cap. The concrete around the well head is sloped to direct run-off away from the well. The well is located within the existing, contained truck unloading area(see Figure E.2). Two additional monitoring wells (B-1-83 and B-2-83) were installed in May 1983. These wells were installed to an approximate depth of 8 to 9 feet below the surface. The wells consist of slotted PVC pipe encased in a protective casing and were designed to monitor the quality of the perched water zones in the fill material.

E-2 SUMMARY OF 1988 FIELD INVESTIGATION

The following is a summary of methodologies utilized in the Spring 1988 field investigation of the Dynecol facility conducted by EDI Engineering and Science. Updated information on the groundwater monitoring system is provided in Section L-1c(iv).

E-2a Monitoring Wells

Two monitoring wells were installed during the 1988 field investigation, i.e., B-4-88 and B-5-88, respectively. The wells consist of two-inch diameter, 5-foot long, 7-slot, continuous wire-round, stainless steel screens, set at a depth of 3 to 8 feet below grade. The screens are attached to PVC casing leading up to the surface where the wells are fitted with flush mount caps.

The wells were drilled with a 4-inch diameter hand auger to a depth of 8 feet below grade. This total depth is two feet below the base of the fill, slightly penetrating the lacustrine clay unit. The annular space around the well was backfilled with a silica sand pack around the screened interval and sealed above the screen with granular bentonite grout.

E-2b Soil Borings

A total of seven soil borings were drilled during the 1988 field investigation. The borings were drilled utilizing a 4 1/4-inch I.D. by 8 1/2 inch O.D. (SB-1, SB-2, SB-3, SB-4, SB-5, SB-6) or a

Table E.1
Summary of Soil Boring Specifications

Soil Boring I.D.	**Date**	**By**	**Depth (Feet)**	**Split-Spoon Sampling Interval (Sample Length/Boring Length) (Feet)**
SB-1-88	3/88	EDI[1]	20	1.5/2.5
SB-2-88	3/88	EDI	20	1.5/2.5
SB-3-88	3/88	EDI	20	1.5/2.5
SB-4-88	3/88	EDI	60	1.5/2.5
SB-5-88	3/88	EDI	60	1.5/2.5
SB-6-88	3/88	EDI	60	1.5/2.5
SB-7-88	3.88	EDI	43.5	38.5-40; 41.5-43
B-1-81	7/81	HMA[2]	36	1.5/5
B-1A-81	7/81	HMA	10	NS
B-2-81	7/81	HMA	36	1.5/5
B-3-81	7/81	HMA	36	1.5/5

1 EDI Engineering & Science, Grand Rapids, Michigan

2 HMA Consultants, Inc., Detroit, Michigan

6 1/4 inch I.D. by 12 inch O.D. (SB-7) continuous flight, hollow-stem auger. Eighteen-inch split-spoon soil samples (following the ASTM Standard Penetration Test D1586 Method) were collected at 2.5 foot intervals in advance of the lead auger. A summary of soil boring specifications is provided in Table E.1 and detailed soil boring logs are presented in Appendix E.1.

When semi-saturated soils were encountered in the split-spoon sampler, the auger was advanced one foot and left standing in the boring for up to 30 minutes in an attempt to allow ground water to enter the boring. Any standing water that may have accumulated was sampled with a Teflon bailer. The bore hole was then bailed dry prior to further advancement of the augers to limit potential cross contamination between the perched water zones.

The sixty-foot borings (SB-4, SB-5, and SB-6) were geophysically logged for natural gamma ray emissions. Initially, the logging device was lowered into the open borehole (SB-4), but collapse of the borehole prohibited an effective logging run. Subsequent logs (SB-5 and SB-6) were run through the hollow-stem auger. Copies of geophysical logs are provided in Appendix E.2.

E-2c Soil Sampling and Analysis

Each 18-inch, split-spoon soil sample was scanned with a photoionization detector (P.I.D) equipped with a 10.2 eV lamp to determine the relative levels of volatile organic compounds (VOC's) present in the subsurface soils. No detectable levels of volatile organic vapors were noted in any of the samples.

A representative composite sample of each 18-inch split-spoon sample was obtained for soil pH and specific conductance analyses. Samples were placed in covered 150 ml plastic containers and analyzed in the field on the same day they were sampled. Duplicate samples were collected in 8 oz. glass jars for future reference of lithologic features and as a backup should the original samples have been lost or contaminated prior to analysis. Soil samples were analyzed for pH using EPA Method 9045 for noncalcareous soils. Soil samples were analyzed for specific conductivity by applying criteria of EPA Method 205 to EPA Method 9045 sample preparation techniques. Standard operating procedures for soil pH and conductance are provided in Appendix L.3.

The pH meter was calibrated using buffered standards of known pH of 7 and 10. These standards were chosen because of the expectation that they would bracket the pH of the soil samples.

Table E.2

Summary of Monitoring Well Specifications

Monitoring Well ID	Installation Date	Installed By	Screened Interval (ft below ground surface)	Top of Casing Elevation (ft) (USGS)
B-1-83*	5/83	SME	2-9**	631.40
B-2-83	5/83	SME	2-8**	632.79
B-3-81	7/81	HMA	16-19	631.50
B-4-88	5/88	EDI	3-8	631.41
B-5-88*	5/88	EDI	3-8	629.67

* abandoned
** screened intervals inferred from well installation sketches
EDI = EDI Engineering and Science, Grand Rapids, MI
SME = Soil and Material Engineers, Inc., Livonia, MI
HMA = HMA Consultants, Inc., Detroit, MI

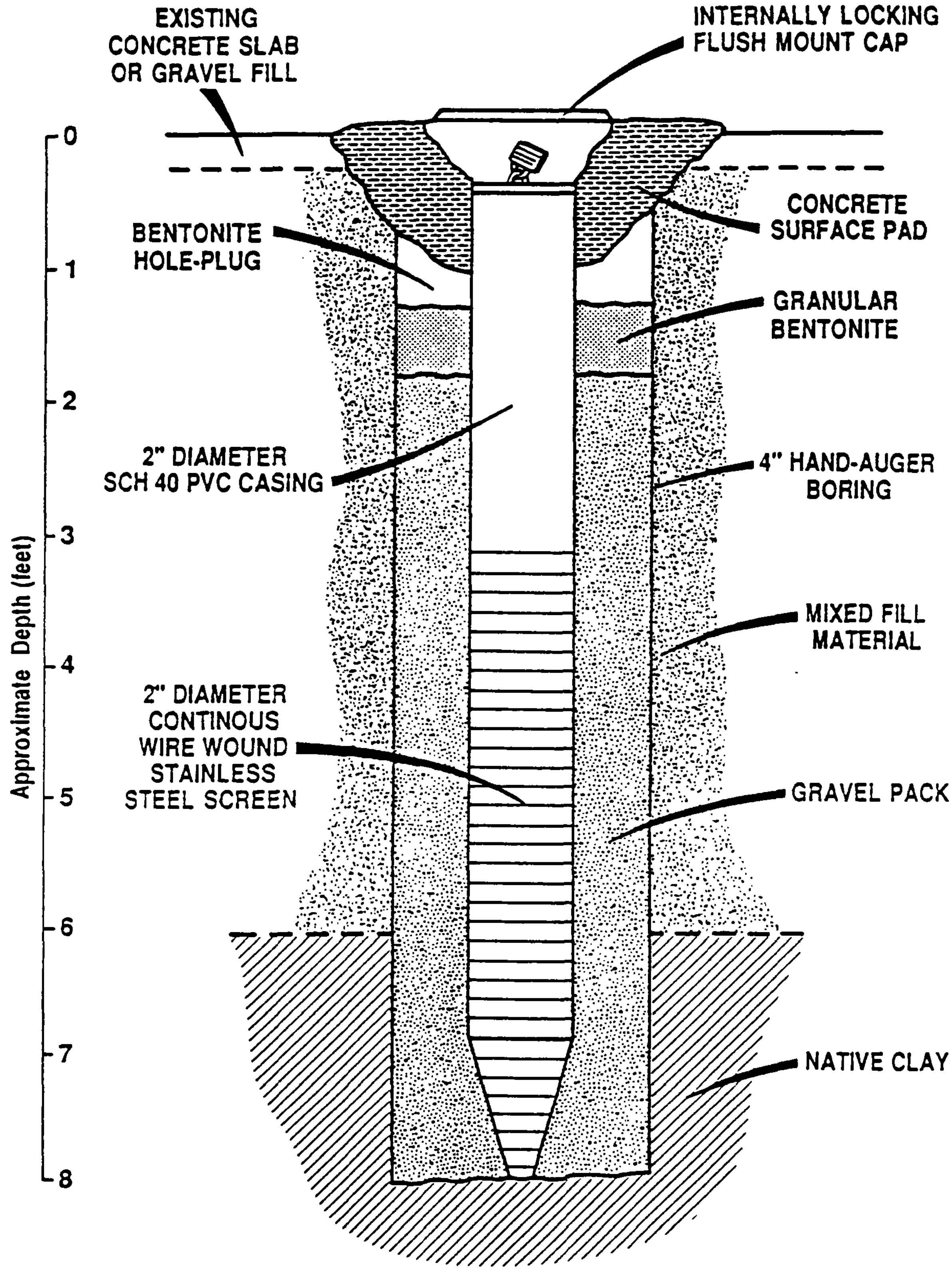


Figure E.5

Monitoring Well Construction
(W-4-88 and W-5-88)

Dynecol, Inc.
Detroit, Michigan

May, 1988 20878

EDI Engineering & Science

Care was taken to store the deionized water utilized in Method 9045, the buffered standard solutions, and the soil samples in similar environments to ensure that sample temperatures were within 2 degrees C of the buffered standard solutions. The conductance meter was calibrated using a standard solution of 1,413 umhos/cm at 25 degrees C. All conductivity readings measured in the field were corrected to a conductivity at 25 deg. C by applying the following relationship:

$$\text{conductivity @ 25 Deg. C} = \frac{K}{1 + 0.0191(t-25)}$$

where: K = measured conductivity
t = sample temperature, deg.C

E-2d Decontamination

Split-spoon samplers were rinsed with clean water and wiped dry with a clean cloth between soil sampling events. Between each individual soil boring all drilling and sampling equipment was steam cleaned. Teflon bailers were steam cleaned and allowed to air dry between each attempted sampling event within any semi-saturated soil zones encountered.

E-2e Elevation Survey

The elevations of all soil boring locations were surveyed using standard surveying techniques. A benchmark located near the intersection of Miller and Mt. Elliot was converted from the City of Detroit datum to a USGS elevation using a correction factor of +479.755 feet. All elevations are referenced to USGS datum. A benchmark was affixed to the power pole across Georgia Street from the Dynecol site after the survey loop was closed for potential future reference.

E-3 HYDROGEOLOGICAL CONDITIONS

E-3a Topography

The regional topography is displayed in Figure E.3. The original topography of northeastern Wayne County has been highly altered by development activities in the region. The closest estimation to the pre-development topographic conditions comes from W.H. Sherzer's 1913 Geological Report on Wayne County. Sherzer describes the elevation of the region as varying from 620 to 640 feet with the crests of dune ridges reaching the latter height. Most of these ridges have been leveled to a thin veneer of sandy soils at the surface through building activities. The topography of Dynecol's site has a total relief of less than two (2) feet across the facility. With the exception of the landscaping area in front of the main office building, the entire facility is essentially paved with concrete or blacktop.

E-3b Regional Soil Features

Due to the extensive development of northeastern Wayne County, detailed soil maps are not available. A general soil map of Wayne County compiled in 1976 by the U.S. Department of Agriculture, Soil Conservation Service describes the region around the Dynecol facility as a boundary area between the Pewamo-Blount-Metamora soil association and the Belleville- Selfridge-Tedrow loamy substratum association. Both of these soil associations are composed of nearly level to gently sloping, very poorly drained to somewhat poorly drained soils with fine to moderately coarse substrata. Soil maps with infiltration rates for southeastern Michigan published by the U.S. Geological Survey (Twenter, 1975) show the northeast portion of Wayne County as being associated with Brookstun, Blount, Hoytville, Toledo, and Colwood soil types. This grouping of soil types has a reported characteristic infiltration rate of one to two inches per hour.

E-3c Regional Hydrogeology

The region surrounding the area of investigation is positioned over the southeast flank of the Michigan Basin. The stratigraphic succession beneath the site consists of Precambrian crystalline basement rocks overlain by Paleozoic sedimentary rock followed by glacial deposits.

E-3c(i) Bedrock Geology

The Paleozoic section present beneath northeastern Wayne County consists predominantly of Silurian and Devonian Carbonates, evaporitic-carbonates, shales, and occasional sandstones. The bedrock surface beneath the site is comprised of carbonates and shales of the Devonian Traverse Group. These Paleozoic rocks dip gently toward the center of the basin (to the northwest) at an angle of generally less than one degree. The total thickness of these rocks is about 5,000 feet.

E-3c(ii) Bedrock Hydrogeology

Ground water in the Paleozoic bedrock generally occurs under artesian conditions. Water is held in storage and migrates through pore spaces (primary porosity) and along fractures, joints, and bedding planes (secondary porosity) within the limestone and sandstone units of the bedrock. The water quality is variably mineralized depending on numerous factors, including the presence of hydrocarbons, local mineral composition of the rock, and the hydrodynamic relationship with the overlying glacial drift.

E-3c(iii) Glacial Geology

The glacial drift deposits present in the region range in thickness from 150-200 feet. The term "glacial drift" embraces all types of sediment deposited during the Pleistocene glacial epoch by ice, meltwater streams, glacial lakes, and wind. Dynecol's facility is underlain by predominantly lakebed (lacustrine) clay deposits and possibly some water reworked moraine material. Mozola (1969) shows nearly entirely lacustrine clay for a one-mile radius around the Dynecol site, with occasional occurences (in descending order) muck and peat, beach ridge sands, and lacustrine sand. Drilling records from two nearby bedrock-penetrating wells indicate that nearly the entire thickness of the glacial sediment is comprised of clay. Locations of these wells are shown in Figure E.3 and drilling logs are provided in Appendix E.3.

E-3c(iv) Glacial Hydrogeology

The availability of ground water from glacial sediments in the region surrounding Dynecol is limited. There are no reported uses of ground water from glacial sediments anywhere within a two-mile radius of the Dynecol facility. Sherzer (1913) described water bearing stratum of sand or gravel at depths varying from 10 to 180 feet within the lacustrine clay deposits of Hamtramck Township (T1S, R12E). Efforts to utilize these water sources for domestic wells commonly necessitated forming a reservoir in the clay and allowing the water from the sand units to seep in. No regional aquifer system has been defined in the area.

E-3c(v) Municipal Water Supplies

The entirety of Wayne County is served by Detroit Metro Water Department. The source of water for this system is derived from Lake Huron, with an additional intake from the Detroit River. A review of public records revealed no domestic ground water supply wells within a two-mile radius of Dynecol's facility. The closest municipal ground water well field is located in

Rochester, Michigan, 22 miles north-northwest of the Dynecol facility. Therefore, no regional ground water quality background data is available.

E-3d Site-Specific Geology

Dynecol's property overlies glacial deposits which are consistent with regional deposit patterns. The sediments were evaluated using information from the eleven soil borings and five monitoring wells summarized in Tables E.1 and E.2. Detailed soil boring logs are included in Appendix E.1. Generally, the soil types encountered beneath the Dynecol facility can be divided into the following three groups:

- Mixed fill unit;
- Lacustrine clay unit; and
- Lacustrine sand/silt unit.

E-3d(i) Mixed Fill Unit

The mixed fill unit exists as a thin veneer of sand, gravel, and clay on Dynecol's property. The composition of the fill material is variable, but locally appears to be comprised of texturally distinct layers. The thickness of this unit varies from 1 to 8 feet. The relative thickness of the unit is depicted in cross sections A-A', B-B', and C-C' (Figures E.6, E.7, and E.8). The lateral distribution of the various textural units within the mixed fill unit is dramatically depicted in the fence diagram (Figure E.9). The mixed fill unit is mainly clay in the northern portion of Dynecol's facility; and contains some sandy intervals in the south and southeastern portion of the site.

E-3d(ii) Lacustrine Clay Unit

The lacustrine clay unit lies immediately beneath the mixed fill unit. The lacustrine clay unit was deposited under near shore, shallow water environments within a glacial lake. Unabraded gastropod tests were recovered in split-spoon samples of the clay, indicating limited transport of the fossils which would concur with the lacustrine clay designation. The clay is commonly silty and occasionally contains gravel suggesting that a portion of the sediment was derived from wave reworked moraine material.

Analyses performed on lacustrine clay samples from borings B-1-81, B-2-81, and B-3-81 during previous investigations include water content, Atterberg limit tests, and falling head permeabilities. The water content of the clay ranged from 9-16 percent. The results of the Atterberg limit tests indicate a liquid limit of 20 percent and a plastic limit of 13.2 percent. The plasticity index was found to be 6.8. The coefficient of permeability, determined from the falling head permeability tests, ranged from 1.25E-8 to 1.60E-8 cm/sec. Based on the analyses, standard penetration tests performed during drilling, and a visual inspection of the clay during soil boring activity, a Unified Soil Classification of CL (clay with low liquid limit) was determined for the lacustrine clay unit.

The lacustrine clay unit extends from immediately beneath the fill to more than sixty (60) feet below surface grade on Dynecol's property. The clay is virtually homogeneous to a depth of 20 feet (elevation of 610 feet) at which point local, discontinuous intervals of lacustrine sand and silt are encountered (see figures E.6, E.7, and E.8).

E-3d(iii) Lacustrine Sand/Silt Sub-Unit

The lacustrine sand/silt sub-unit occurs as isolated stringers of silt and sand within the lacustrine clay unit. The factors controlling the deposition of these relatively coarser-grained sediments include an available source of sand and silt, the relative energy level of the environment of deposition, and the bathymetric configuration of the glacial lake bed. Textural characteristics of the sediment indicate a Unified Soil Classification (USC) of predominantly ML (silt with low liquid limit) and SM (silty sand) with occasional occurences of SM-SP (silty sand-poorly graded sand). The spatial distribution of the lacustrine sand/silt is subdivided in cross sections A-A', B-B', and C-C' (Figures E.6, E.7, and E.8) into the associated USC soil types. The existing data indicate that intervals of the lacustrine sand/silt subunit have limited lateral continuity, none of which extend across the entirety of Dynecol's property.

E-3e Site-Specific Hydrogeology

One of the objectives of this investigation was to identify the uppermost aquifer, and those aquifers hydraulically connected, beneath Dynecol's facility. Part 22 of the General Rules of the Michigan Water Resources Commission (Act 245) defines a usable aquifer as "an aquifer, or that portion of an aquifer or aquifer system that is capable of providing water in sufficient quantity and satisfactory quality...to serve one or more protected uses." (Act 245 Rule 323.2203). Protected uses include individual, public, municipal, agricultural, or industrial water supplies.

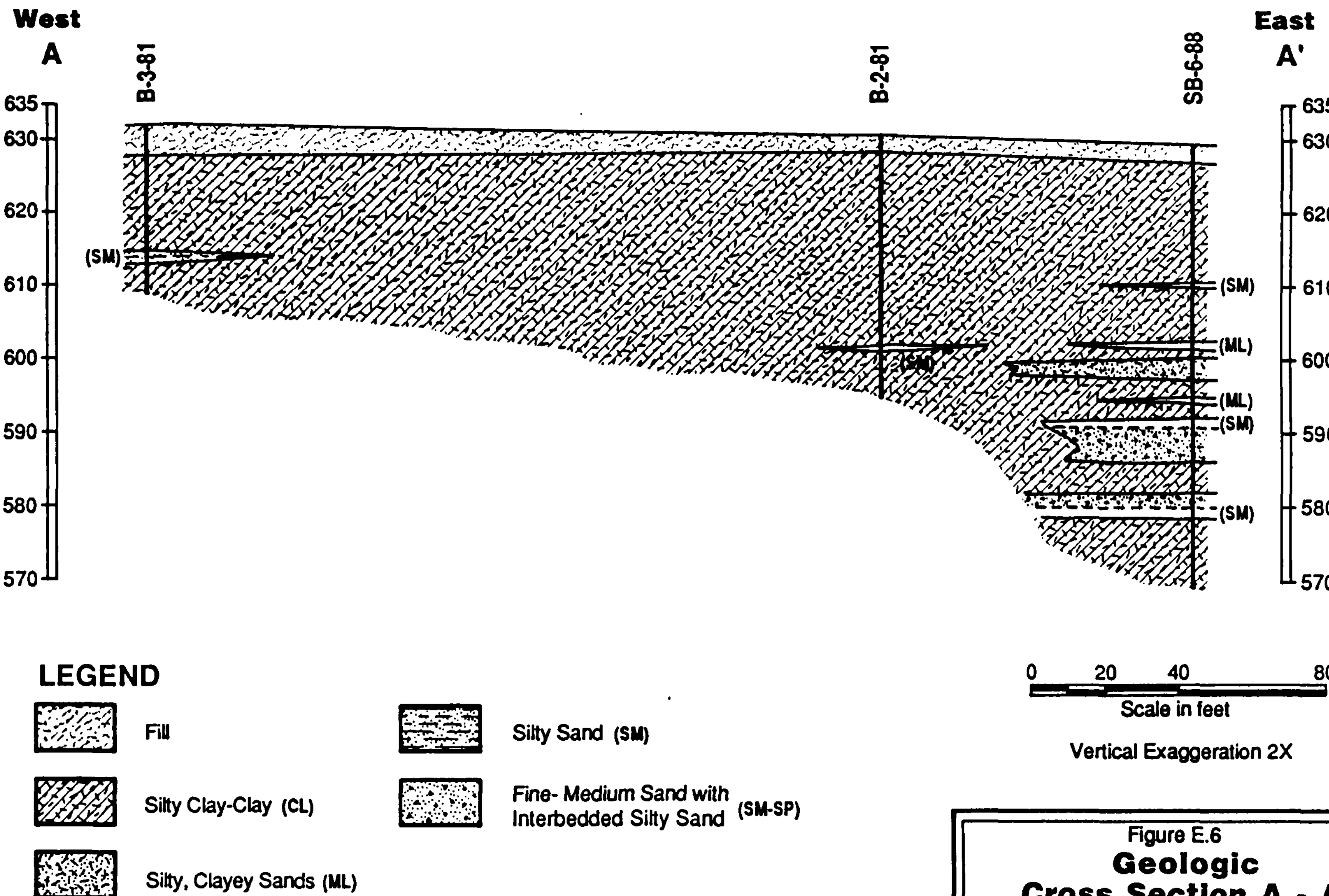


Figure E.6
Geologic
Cross Section A - A'
Dynecol, Inc.
Detroit, Michigan
April, 1988 20878

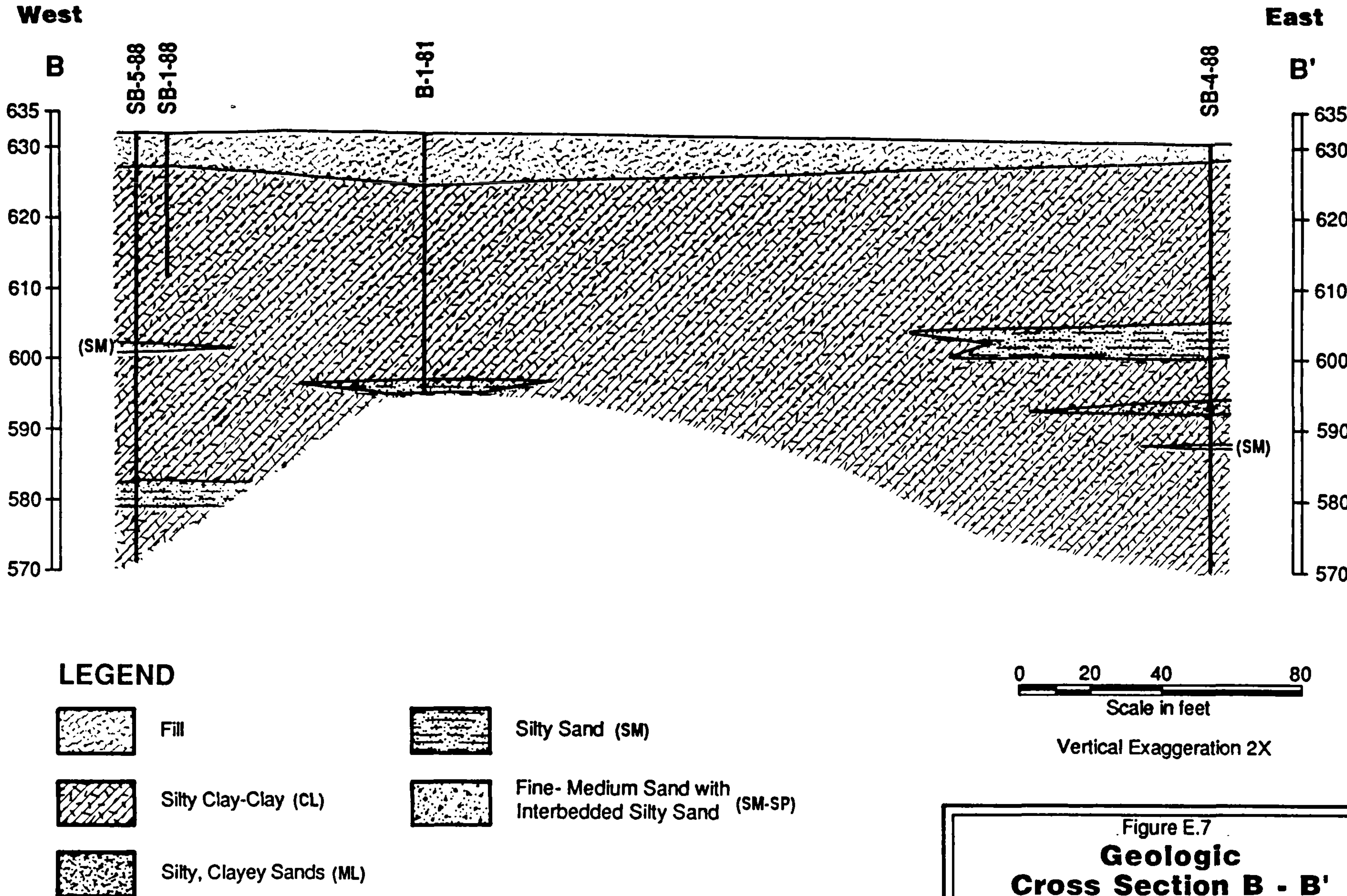


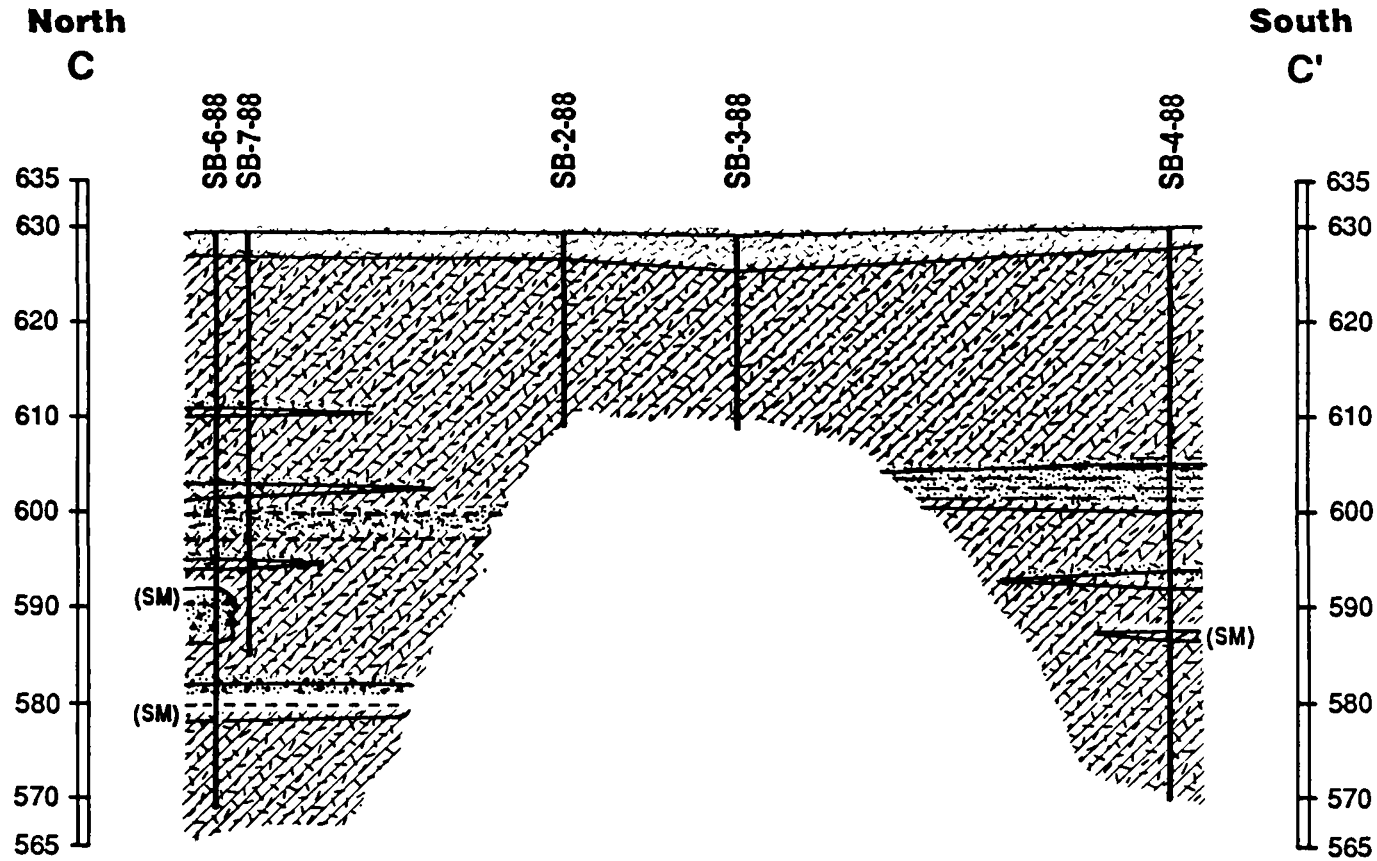
Figure E.7

Geologic Cross Section B - B'

Dynecol, Inc.

Detroit, Michigan

April, 1988 20878



LEGEND

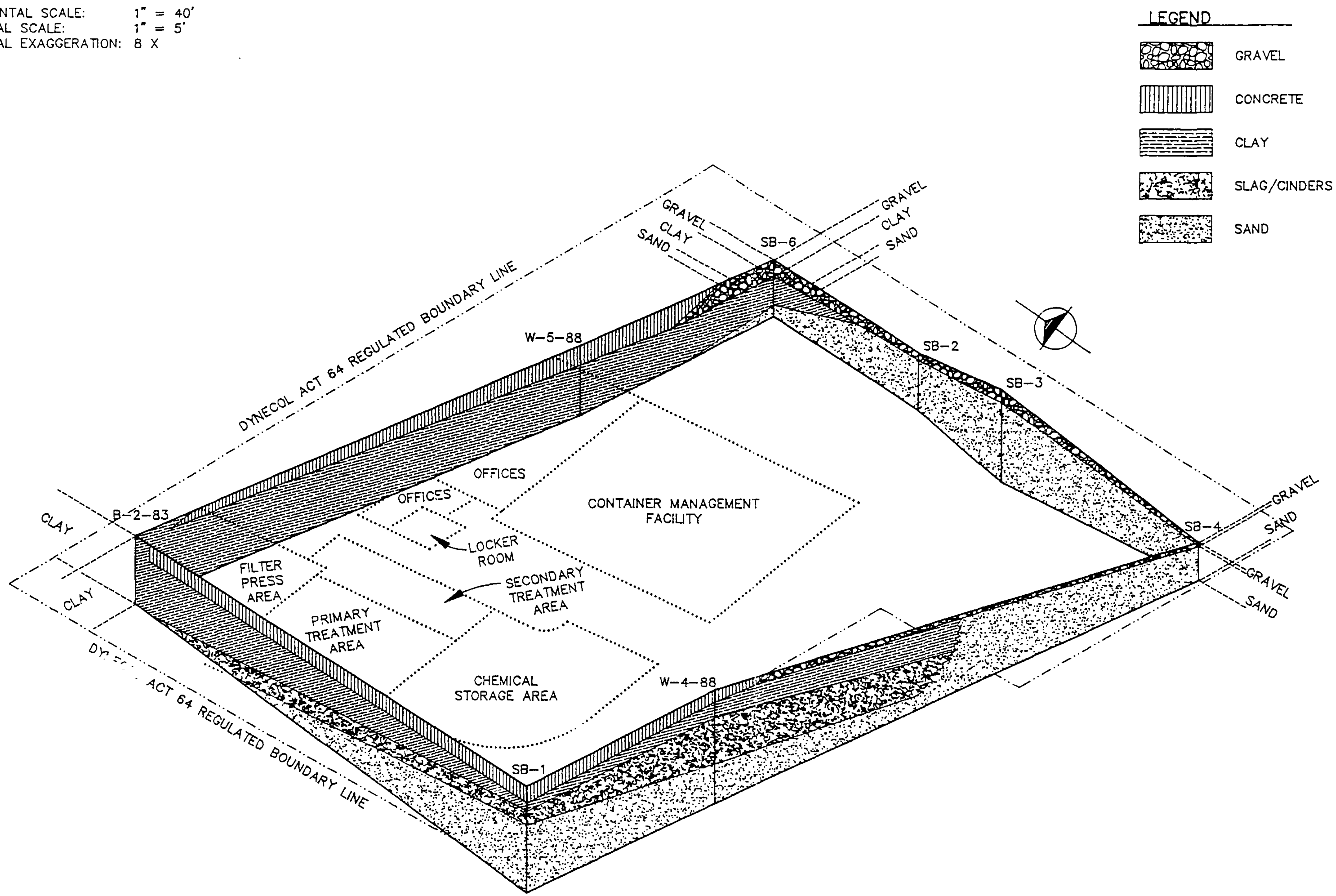
- Fill
- Silty Clay-Clay (CL)
- Silty, Clayey Sands (ML)
- Silty Sand (SM)
- Fine- Medium Sand with Interbedded Silty Sand (SM-SP)

0 20 40 80
Scale in feet

Vertical Exaggeration 2X

Figure E.8
Geologic Cross Section C - C'
Dynecol, Inc.
Detroit, Michigan
April, 1988 20878

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 5'
VERTICAL EXAGGERATION: 8 X



FENCE DIAGRAM
DEPICTING COMPOSITION
OF MIXED – FILL UNIT
FOR REGULATED AREA

1:30
81045-
CJF12279-

FIGURE E.9

COMPOSITION OF MIXED FILL

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DETROIT, MICHIGAN

NOVEMBER, 1994

8104

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Act 245 also defines an aquifer as "underground water-bearing earth materials through which ground water moves in sufficient quantity to serve as a source of water supply" (Act 245 Rule 323.2202). These definitions are similar to the definition of an aquifer provided in 40 CFR 260.10 which defines an aquifer as "a geologic formation, group of formations or part of a formation capable of yielding a significant amount of ground water to wells or springs." The following is an analysis of the hydrogeologic characteristics and water-bearing potential of the identified geologic units beneath Dynecol's facility.

E-3e(i) Mixed Fill Unit

Infiltration of precipitation may periodically form a thin saturated to semi-saturated zone within the mixed fill unit. The quantity of water contained in the fill, as well as the ability of that water to flow, is dependent on the textural nature of the fill. The typically heterogeneous nature of fill material limits a hydrogeologic interpretation of groundwater flow and water quality characteristics. However, field experience on this site has established that the occurence of perched ground water is very sporadic.

Four shallow wells were screened within and just below the mixed fill on Dynecol's property (B-1-83, B-2-83, B-4-88 and B-5-88). Historical water level data from these wells is erratic, suggesting poor hydraulic connection, if any, within the mixed fill unit across the site. A summary of water level data is presented in Table E.3. Water level data for these isolated, sporadic occurences of perched groundwater zones cannot be evaluated to calculate flow direction or flow rates in accordance with Act 64, Rule 506.1(b) or to derive the water level contour map specified in Act 64, Rule 506(2)(c).

The shallow ground water in the mixed fill unit does not satisfy any of the aquifer definitions referenced above as the mixed fill is not capable of yielding ground water of sufficient quantity to serve as a source of water supply. There are no known wells in the mixed fill unit other than monitoring wells, and it is highly unlikely that any production wells will be constructed in the mixed fill unit in the future due to the extremely low, inconsistent ground water yield of the fill.

E-3e(ii) Lacustrine Clay Unit

The lacustrine clay unit is typically unsaturated with occasional zones of partial saturation where it is in contact with isolated

TABLE E.3
SUMMARY OF WATER LEVEL DATA

MONTH/YEAR	WATER LEVELS (FEET) B1	B2	B3	B4	B5
07/83	8.52	5.23	3.67		
06/84	4	3.42	3.33		
09/85	3.63	NA	4.75		
03/86	3.94	7.08	6.31		
07/86	2.96	NA	4.67		
10/86	1.88	NA	4.67		
02/87	3.81	NA	4.83		
03/87	3.42	6.81	4.67		
06/87	3.56	NA	5.12		
09/87	2.96	NA	4.63		
12/87	2.77	NA	4.77		
03/88	3.08	NA	4.9		
06/88	NA	9.21	5		
09/88	5.29	NA	5.35		
12/88	NA	NA	4.94	3.58	NA
03/89	3.71	NA	3.09	3.43	NA
06/89	2.67	NA	6.69	2.54	6.23
09/89	4.63	NA	5.15	4.52	6.15
12/89	4.48	NA	9.58	4.27	NA
03/90	2.35	NA	3.98	2.63	2.17
06/90	2.52	NA	3.72	2.68	NA
09/90	2.67	NA	8.21	3.27	NA
12/90	1.66	NA	1.21	1.96	NA
03/91	3.23	NA	4.42	3.06	NA
06/91	4.8	5.7	4.6	3.5	NA
09/91	5.5	NA	5.6	3.8	NA
12/91	NA	NA	4.7	2.7	NA
03/92	2.78	8.57	6.1	2.76	*
06/92	3.93	NA	5.15	3.69	*
09/92	NA	NA	7	9	*
12/92	2.93	NA	4.82	3.61	*
03/93	2.06	NA	4.1	2.16	*
06/93	5.55	NA	5.05	4.19	*
09/93	6.27	NA	5.56	4.58	*
12/93	*	NA	5.02	4.15	*
03/94	*	NA	4.42	2.54	*
06/94	*	NA	5.63	4.12	*
09/94	*	NA	7.28	4.52	*
12/94	*	NA	6.56	3.09	*

* Officially closed
NA = Not available (Dry Well)

perched water intervals of the lacustrine sand/silt sub-unit. The unit has a low permeability (1.25E-8 to 1.60E-8 cm/sec) and is not considered as an aquifer since it will not yield a significant quantity of water. Recharge of the lacustrine clay unit is limited to very slow infiltration from low-lying zones within the mixed fill unit. The quantity of water entering the clay is considered very minimal as the clay serves as an effective barrier to any substantial vertical migration. Generally, the water content of the clay decreases with depth as observed through drilling activities and confirmed with laboratory analyses on samples for borings B-1-81 and B-3-81 (see Appendix E.1).

E-3e(iii) Lacustrine Sand/Silt Unit

The stringers of lacustrine sand and silt contained within the lacustrine clay occasionally appear saturated through visual inspection of split-spoon core samples. Whether the water content is sufficient to overcome capillary forces within the silty soils to provide "free water" is uncertain. The potential for significant recharge to these isolated sands and silts is low due to their isolation within the surrounding lacustrine clay unit. Therefore, intervals of the lacustrine sand/silt sub-unit are not considered usable aquifers due to their inability to produce a significant quantity of water. A summary of occurences of the lacustrine sand/silt sub-unit is provided in Table E.4.

The borehole gamma log of SB-5-88 appears to show a sandy or silty unit between 25.5 and 30 feet below ground level (see Appendix E.2). Split-spoon soil samples from 25.5-26 feet and 28.5-30 feet below ground level in SB-5-88 did not contain a sandy or silty unit. Additionally, the blow counts recorded from the split-spoon sampler penetration were consistent with those obtained in the lacustrine clay unit. Therefore, the lower gamma counts recorded over the 25.5 to 30-foot depth interval are not considered a representation of the presence of the lacustrine sand/silt subunit in that interval.

E-3f Summary of Site-Specific Hydrogeology

None of the identified geologic units within the initial sixty (60) feet of sediment encountered beneath Dynecol's facility comply with the previously referenced definitions of an aquifer. The mixed fill unit is a limited and inconsistent source of perched ground water. The mixed fill unit also immediately underlies Dynecol's facility. Therefore, the only viable leak detection system in the event of a failure of the secondary containment at the site is to monitor the perched water intervals within the mixed fill unit under the Dynecol facility.

Table E.4

Summary of Occurrences of Lacustrine Sand/Silt Subunit Intervals

Boring I.D.	Elevation of Interval (USGS)	Thickness (feet)	USC	Observations
SB-4-88	604.7-600.2	4.5	SM	S-S*
	594.2-592.7	1.5	ML	S-S
	588.2-588.0	0.2	SM	S-S
SB-5-88	602.13-601.13	1.0	SM	S-S
	583.23-579.93	3.3	SM	S-S
SB-6-88	610.9-610.7	0.2	SM	S-S
	602.3-601.3	1.0	ML	dry
	600.8-597.3	3.5	ML	S-S
	595.3-594.8	0.5	ML	dry
	592.3-590.8	1.5	SM	S-S
	590.8-586.3	4.5	SM-SP	sample obtained: pH=8.37
	582.3-582.1	0.2	SM	dry
	581.9-580.3	1.6	SM-SP	S-S
	580.3-578.8	1.5	SM	S-S
B-1-81	598-596**	2.0	SM	driller reports: "small amount of water"
B-2-81	603-602.8**	0.2	SM	driller reports: "moist sand"
B-3-81	615-613**	2	SM	saturated (presently screened by monitoring well B-3-81)

---

* S-S = semi-saturated, but no ground water sample obtained.

** estimated elevation

Detailed monitoring plans to accomplish this task are outlined in Section L, Environmental Monitoring Programs.

E-4 SITE SOIL AND GROUND WATER QUALITY

E-4a Results of Soil Analyses

The quality of subsurface soils was evaluated by analyzing a total of 90 soil samples obtained with a split-spoon sampler collected from six boring locations drilled in March 1988. Three soil borings (up to a maximum depth of 40 feet) were drilled as part of a project to upgrade the groundwater monitoring system, i.e., to install additional functioning groundwater monitoring wells in the surficial fill material beneath the facility, at Dynecol in October 1993, but neither the soil nor the groundwater samples were taken for chemical analysis as part of this scope of work. A summary of analytical results from the March 1988 evaluation is presented in Table E.5.

E-4b Results of Groundwater Analyses

The quality of the shallow and isolated groundwater pockets at the Dynecol facility has been monitored since 1982. The chemical constituents being monitored are listed in Table L.2 (Section L, Environmental Monitoring Programs). A summary of analytical data gathered from the existing monitoring system, i.e, wells B-2, B-3, and B-4, during the period between March 1992 and September 1994, is presented in Appendix E-4. Since the data collection for the establishment of the background values for wells B-2, B-3, and B-4 did not start until March 1992, prior data were eliminated.

E-5 SUMMARY

Analyses of soil types and hydrogeological relationships beneath the Dynecol facility reveal very limited potential for infiltration and subsurface migration of a hazardous waste in the event of a release. The low permeability of the underlying sediment and the secondary containment of treatment and storage units provide adequate protection against soil and groundwater contamination. Additionally, the results of soil borings (March 1988, and October 1993) on the site confirm that no usable aquifer exist within the upper 40 feet of soils beneath the Dynecol's facility.

The mixed fill unit is an inconsistent and limited source of perched ground water. A leak detection system in the form of monitoring wells installed in isolated pockets of groundwater within the mixed fill is used to comply with regulatory requirements (40 CFR, Part 264, Subpart F; Michigan Act 64 Rule 612(1)(b)). Details on the methodologies and procedures of this monitoring system are outlined in Section L, Environmental Monitoring Programs.

E-6 SUMMARY OF 1993 STUDY

Additional work was performed in October 1993 to comply with MDNR's request for installation of additional monitoring wells. This project consisted of drilling and screening soils for moisture to a maximum depth of 40 feet in three locations to install replacement wells, if groundwater was present, for three wells, i.e., B-2-83 (found to be frequently dry), B-5-88 (abandoned due to building expansion in 1991), and B-1-83 (found to be poorly constructed, contaminated with grout and subsequently used only as a piezometer). Detailed information on this project is presented in Section L.

Table E.5
Summary of Field Analysis for Soil pH and Conductivity

Sampled Interval (ft)	pH (Standard Units) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	Conductivity (umhos/cm @ 25°C) SB-1	SB-2	SB-3	SB-4	SB-5	SB-6
1-2.5	7.77F	10.44F	8.68F	9.51F	-	7.95F	524	1030	343	493	-	442
3.5-5	7.40F	8.24	8.76F	8.79	-	8.29	370	844	199	440	-	413
6-7.5	7.71	12.22	8.83	8.04	-	8.81	548	1593	243	320	-	316
8.5-10	7.96	8.55	8.54	8.28	8.02	8.32	429	202	206	223	526	253
11-12.5	8.12	8.65	8.64	8.29	-	8.65	206	206	156	210	-	212
13.5-15	8.32	8.62	8.56	8.53	8.34	8.56	195	230	152	184	197	255
16-17.5	8.22	8.87	9.06	8.60	-	8.56	176	216	187	174	-	242
18.5-20	8.42	8.95	8.91	8.77	-	8.64	190	184	204	194	-	239
21-22.5	-	-	-	8.83	8.75	8.80	-	-	-	174	154	216
23.5-25	-	-	-	8.50	8.80	8.97	-	-	-	175	176	212
26-27.5	-	-	-	8.53	8.84	9.03	-	-	-	202	161	197
28.5-30	-	-	-	8.88	9.00	9.11	-	-	-	180	154	183
31-32.5	-	-	-	9.00	9.01	9.12	-	-	-	169	154	146
33.5-35	-	-	-	8.98	9.00	9.14	-	-	-	182	152	149
36-37.5	-	-	-	8.75	8.98	9.11	-	-	-	195	169	159
38.5-40	-	-	-	8.75	9.06	9.04	-	-	-	160	170	178
41-42.5	-	-	-	8.95	9.14	9.01	-	-	-	182	200	192
43.5-45	-	-	-	8.95	9.14	9.12	-	-	-	242	214	175
46-47.5	-	-	-	8.63	8.89	9.05	-	-	-	250	215	174
48.5-50	-	-	-	8.54	8.92	8.98	-	-	-	251	198	218
51.52-5	-	-	-	8.55	9.09	9.01	-	-	-	244	206	219
53.5-55	-	-	-	8.59	8.79	9.03	-	-	-	237	203	212
56-57.5	-	-	-	8.57	9.17	9.04	-	-	-	304	219	220
58.5-60	-	-	-	8.57	8.93	9.00	-	-	-	258	208	262

F denotes sample of fill material

SECTION F

PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the requirements of Michigan Act 64, Rule 299.9504(c) which incorporates 40 CFR 270.14(b)(4), (5), (6), (8), and (9) by reference. Other regulations addressed to complete this section include 40 CFR 264.14, 264.15, 264.17, 264.174, 264.194 and 264 Subpart C. Items discussed include: general security provisions; inspection schedule; spill prevention, control, and countermeasures plan; and prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes.

F-1 **SECURITY [40 CFR 270.14(b)(4) and 264.14]**

F-1a Waiver of Preparedness and Prevention Requirements [40 CFR 264.14(a) and 270.14(b)]

Dynecol, Inc. does not wish to request a waiver of the preparedness and prevention requirements, as contained in 40 CFR 264, Subpart C.

F-1b Security Procedures and Equipment [40 CFR 264.14(b) and (c)]

The Dynecol site is completely surrounded by a six-foot chain-link fence with a barbed wire top. The five access points into the facility are located as follows:

* Two automatic sliding gates on the east side of the facility (Sherwood Street) for vehicular access to main office building and the east side of the facility;

* One automatic sliding gate on the west side of the facility near the filterpress building for vehicular traffic exiting the facility onto Georgia Street;

* One automatic sliding gate on the west side of the facility about 50 feet west of the filterpress building for vehicular entering/exiting the annex office building and maintenance area from/onto Georgia Street.

* One roll-up door for vehicle traffic leading into the treatment building from Georgia Street.

The three main access points to the facility, i.e., two sliding gates on Sherwood Street and the sliding gate near the filter press building, are controlled, operated, and monitored by surveillance cameras from three locations within the facility, i.e., the main office, the control room, and the security area (during weekends). These gates are also provided with self-timer devices that will automatically close the gates after vehicle passage.

The facility is normally staffed 24 hours per day, five days per week, by Dynecol personnel, and the site security is managed by facility personnel 24 hours per day during weekdays. At all other times when the facility is not staffed by Dynecol personnel, it is staffed by contracted security personnel. Routine security surveillance includes inspection of the facility, equipment, and property, including fences, gates, doors, and lighting.

Waste shipments to the facility are transported by either company employees or common carriers. Vehicles are permitted access to the facility only after they are cleared by site personnel upon arrival at the facility.

Warning signs are posted on the east and west gates and along other points on the site perimeter fence. The sign plates read "Danger, Unauthorized Personnel Keep Out" and are noticeable from all angles of approach and from a distance of 25 feet. Entry to the facility by unauthorized vehicles and people is prohibited and ensured by these security measures.

F-2 INSPECTION SCHEDULE [40 CFR 270.14(b)(5), 264.15, 264.174, 264.194, and 264.33]

F-2a General Inspection Requirements

The facility structures and equipment are inspected routinely by plant personnel, to identify malfunctions, deterioration, operator errors, and any other situation which may lead to the release of hazardous materials or a threat to human health or the environment. An "Inspection Report Form" has been developed for use during facility inspections. This form specifies the areas to be inspected, the frequency of inspection, and the type of problems to look for. The inspector, when identifying a problem, is required to specify the type of problem, the required remedial action, and time frame for completion of the remedial action. Completed inspection report forms are kept at the facility's office. The types of problems that are looked for during the inspection in each area of the facility are outlined in Tables F-2c.a through d, along with the inspection frequency. Copies of inspection forms can be found in Appendix F.1.

F-2b Specific Inspection Requirements

F-2b(i) Tank Inspection

The hazardous waste treatment and storage tanks are inspected as follows. The shell and lining (if relevant) of each tank are visually inspected weekly and monthly, respectively, for any signs of erosion, corrosion, or leaks. The tank containment structures are also inspected daily for erosion, cracks, leaks, and the pumps, piping, hoses, valves, and fittings are also inspected for signs of corrosion, leaks, malfunctions, or operator errors. The area immediately surrounding the tanks is inspected daily to detect signs of leakage.

Other equipment associated with the treatment and storage tanks at the facility that is routinely inspected includes electrical equipment (circuit breakers and control panels), material-handling equipment (mixers, air compressors, filter presses, silos, etc.), monitoring equipment (gauges), security equipment (fencing, gates and lighting), and safety and emergency equipment (eye washes, showers, water-supply valves, alarms, fire extinguishers, etc.). Refer to Attachment N for copy of an inspection report.

F-2b(ii) Container Management Facility Inspection

The container management facility is checked at the frequency specified in the inspection schedule. Potential types of problems that may be encountered in the container management facility are provided on the inspection form to help ensure a thorough inspection. Refer to Appendix N for a copy of inspection report.

F-2c Inspection Schedule

Specific items vary with respect to the frequency in which they must be inspected. The following intervals and times are used:

(1) Monthly - During the first full week of each calendar month

(2) Weekly - Friday of each week

(3) Daily - Each day the facility handles hazardous wastes

The inspection schedules for specific items will be as follows:

(1) Bulk Treatment Area. Table F-2c.a

(2) Container Management Area. Table F-2c.b

(3) General Site Security. Table F-2c.c

(4) Environmental Monitoring system. Table F-2c.d

Table F-2c.a
Tank Storage & Treatment Area
Inspection Schedule

Inspection Items	Specific Items	Type of Problems	Inspection Frequency	Remedial Action
Operating Equipment	Pumps Transfer Lines Valves/Hose/Fittings Overfill Devices	Cracks Leaks Corrosion Deterioration	Daily	Repair Replace
Mechanical/ Equipment	Mixers Instrumentation Electrical Compressed Air Line systems	Signal Electrical Leaks Malfunction	Dailly	Repair Replace
Pollution Control Equipment	Scrubber Systems	Cracks Leaks Malfunction	Daily	Repair Replace
Tank Storage & Treatment Area	Dikes Secondary Containment Buildings Sump Pumps/Areas	Cracks Leaks Deterioration Corrosion Malfunction	Daily	Repair
Tank External	Foundation Pipes/Fittings/Valves Tank Shell-Visual Tank Shell-Thickness(1)	Cracks Deterioration Leaks Corrosion	Weekly	Repair Replace
Tank Internal	Linings	Cracks Deterioration	Monthly	Repair Replace
Safety & Emergency Equipment	Emergency Eye Wash & Safety Shower Fire Extinguishers Alarms	Malfunction Recharge Malfunction No Access	Weekly	Repair Replace Recharge Reload

(1) Via Ultrasonic Standard Method

Table F-2c.a(cont'd)

	Water Supply Valves SCBA Spill Control Materials	Malfunction No Access Recharging Out of Place	Weekly	Repair Replace Reload
Loading/Unloading Areas	Pad Coatings	Spilled or Leaked Wastes Corrosion Cracks	Daily	Remove Repair Replace

Table F-2c.b
Container Storage Area
Inspection Schedule

Inspection Items	Specific Items	Type of Problems	Inspection Frequency	Remedial Action
Loading/Unloading/ Containment/Bulking Areas	Walls Floor Sump	Cracks Leaks Deterioration Erosion	Weekly	Repair
Storage Area	Waste Containers	Placement Stacking Leaks Labeling Segregation Aisle Space Capacity	Weekly	Relocate Replace Repair
Safety and Emergency Equipment	Communications Fire Extinguishers Alarm Actuators Signs Sprinkler System Emergency Eyewash and Shower Spill Response Personal Protective Equipment	Malfunction Reload Recharging Missing	Weekly	Repair Replace Reload
Overall Housekeeping	Loading Dock Truck Well Storage Bays Bulking Area Bulking Equipment Conveyors Drum Washing Area	Spilled or Leaked or Accumulated Waste	Weekly	Remove Clean up

Table F-2c.c
General Site & Security
Inspection Schedule

Specific Area	Specific Items	Frequency	Condition or Concern	Remedial Action
Yard	Perimeter Fence Visual	Weekly	Breaks, Tears, or other Openings Damage Malfunction	Repair Replace
	Entrance Gates Visual	Weekly	Damage Malfunction	Repair
	Yard Lighting	Weekly	Malfunction	Repair
	Plant Alarm System	Weekly	Malfunction	Repair
	Paging System	Daily	Malfunction	Repair
	Closed Circuit System	Daily	Malfunction	Repair
Hazardous Waste Management Unit	Site Surveillance Visual	Continuous	Unauthorized Personnel	Remove
Fence	Warning Signs	Weekly	Missing Unreadable	Replace

Table F-2c.d
Environmental Monitoring System
Inspection schedule

Specific Items	**Types of Problems**	**Inspection Frequency**	**Remedial Action**
Monitoring Wells	Physical Integrity Destroyed	Each Monitoring Event	Obtain approval and replace or repair*
	Protective casing/barrier	Each Monitoring Event	Repair or replace**
	Concrete apron damaged	Each Monitoring Event	Repair or replace**
	Cap damaged or missing	Each Monitoring Event	Replace
ᴾurging & ampling equipment	Malfunction Damaged	Each Monitoring Event	Repair Replace
Effluent Discharge sampler	Malfunction Damaged	Each Monitoring Event	Repair
Air Samplers***	Malfunction Damaged	Each Monitoring Event	Repair Replace

* Obtain approval of Waste Management Division before replacement or major repair

**Notify Waste Management Division and provide an explanation of these problems and remedial actions with the data submittal for that monitoring event

***Inspection, repair and maintenance performed by outside contractor

NOTE-Remedial actions without asterisk(s) are considered routine or preventative maintenance and no approval or reporting is required.

F-2d Remedial Action

If inspections reveal that no-emergency attention is needed, the maintenance will be completed as soon as possible to preclude further damage and reduce the need for emergency repairs. If a hazard is imminent or has already occured, as revealed during the course of an inspection or at any time between inspections, remedial action will be implemented immediately. If indicated by the situation, Dynecol personnel will notify the appropriate authorities as described in the Contingency Plan (Section G). In the event of an emergency involving the release of hazardous constituents to the environment, response efforts will be directed towards containing the hazard, removing it if necessary, and decontaminating any affected area according to the procedures outlined in the Contingency Plan.

During an inspection of the facility, if a tank or container holding hazardous wastes is found to be in poor condition (such as apparent structural defects or evident corrosion and leakage), the hazardous waste is transferred to another tank or container in good condition. In the case of a drum, the drum and hazardous waste are transferred to, and contained within, a salvage/ recovery drum or a replacement drum.

F-2e Inspection Log

Inspection records are maintained at the facility for three years. In addition to logging the condition of various equipment or systems, room is provided to comment on specific operations or problems observed, and what action, if any, was taken.

F-3 EQUIPMENT REQUIREMENTS [40 CFR 264.32]

F-3a Internal Communication

Internal communication is provided by means of the facility telephone and paging systems and portable two-way radios. An internal alarm system capable of providing immediate emergency signals to facility personnel is available on site. The locations of the alarm actuators are indicated in Table G.2.

F-3b External Communication

External communication is also provided through the facility telephone system (as described in Section F-3a above).

F-3c Access to Communication and Alarm Systems [40 CFR 265.34]

The alarm actuator buttons and emergency telephones are located in areas where personnel would be working during their daily activities. These alarm actuator buttons and telephones are always accessible since all walkways to them, and the areas surrounding them, are maintained free and clear of any obstructions.

F-3d Emergency Equipment

Portable fire extinguishers (classified for Class A, B, and C fires and with a capacity of 20 pounds) are located throughout the facility. Their locations at the facility are illustrated in Figure G.1 and summarized in Table G.2 (Section G).

Portable spill control equipment and materials include:

* Air-driven diaphragm pumps along with appropriate hosing and couplings;

* Soda ash bags for spill neutralization purpose;

* Shovels and squeegees;

* Absorbent pads/pillows/socks.

Decontamination and personal safety equipment are provided at the facility as follows: emergency showers and eyewash fountains are located in Building 2, the press building, the primary treatment area, the bulk tanker unloading area, the container management building, and the garage area; and two Scott Air Packs, containing 30 minute of air supply each, are located on the north wall of the driver waiting area.

F-3e Water for Fire Control [40 CFR 264.32(d)]

Water is provided to the facility from City of Detroit water supply mains. Water supply is available within the plant at the following locations:

Valve Size	Location
1"	Garage building (by office door)
1"	Garage building (by south door)
1"	Compressor room
1"	Secondary treatment area, west wall
1"	Building 2, upper level, west wall
1"	Container management building
2"	Building 2, first level
2"	Press building, east wall
2"	Garage building, south wall
2"	Secondary treatment area, east wall
2"	Top of primary area
2"	Truck unloading pad
3"	Primary treatment area, east wall

Water hoses are readily available at the facility for use as required.

The Container Management Facility is equipped with an automatic, foam-water, closed head sprinkler system (AFFF type) that is supplied by an eight-inch water main with water pressure less than 60 psi. The capacity of this system is 0.30 gpm/sf. A sprinkler system which is composed of six 50lb-dry chemical cylinders is also available for fire control at the storage bay #1.

F-3f Aisle Space Requirements [40 CFR 264.35]

Access into the facility and movement within the facility is maintained free and clear of obstructions in order to allow movement of spill control and decontamination equipment within the plant. Aisles and walkways between tanks and equipment in both the storage and process areas are maintained free and clear of obstructions in order to provide unobstructed movement of personnel and portable emergency equipment within these areas. Within the Container Management Facility, aisle space is maintained in order to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility in an emergency.

F-3g Emergency Equipment Inspection and Maintenance

All facility alarm systems, fire protection equipment, spill control equipment, and decontamination equipment are inspected, tested, and maintained on a regular basis to help ensure proper operation during an emergency per the inspection schedule (See Table F.2.c.a-d).

The internal alarm system is inspected and tested weekly. Each emergency alarm actuator button is inspected to verify that access to the button remains unobstructed. Each button is then tested to ensure its proper operation. Any obstructions identified during inspection are promptly removed, and any malfunction identified during testing is immediately repaired.

The telephone system, which is used for both routine business and emergency communications, is tested daily during its routine usage. Any malfunctions are immediately reported to the telephone utility and prompt repair service is requested.

The portable fire extinguishers are inspected weekly. The inspection consists of verifying that each fire extinguisher is located in its designated location and that access to the fire extinguisher is unobstructed. The pressure gauge is checked to see that proper pressure is maintained. The container, mechanical parts, nozzle, locking pin, etc. are examined for corrosion, damage, tampering, and leaks. Testing and recharging is completed according to manufacturer's instructions by a qualified professional maintenance service and pertinent data is recorded on each fire extinguisher at the time of service.

The portable spill control equipment (portable pumps, absorbent pads/pillows/socks, portable hoses and fittings, and soda ash) are inspected weekly. The personal protective equipment is inspected and tested regularly. The emergency showers and eyewash fountains are inspected to assure unobstructed access and to verify proper operation. The two Scott Air Packs are inspected to assure unobstructed access, and absence of corrosion, leaks, damage, and tampering. Scott Air Pack testing and recharging is performed according to the manufacturer's instructions by a qualified contractor.

Water supply valves and hoses are inspected and tested regularly to ensure proper operation and freedom from corrosion, damage, and leakage.

F-4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [40 CFR 270.14(b)(8)]

F-4a Unloading Operations [40 CFR 270.14(b)(8)(i)]

F-4a(i) Treatment Facility

Wastes are delivered to the treatment facility via bulk tankers which enter at the east gate (Sherwood Street) and proceed, upon clearance, to the recessed truck unloading pad located on the west side of the facility. The following unloading procedures are used:

- After tank truck has come to a complete stop, brakes are set.
- Prior to unloading operations, the receiving tank is visually inspected to ensure there is sufficient capacity for a material transfer. Overfill protection is ensured by presence of high level alarm systems on receiving tanks.
- The transfer operations during loading/unloading are regularly monitored by plant operators and/or drivers to ensure quick detection of any leakage.
- The volume of material loaded/unloaded is properly recorded in daily operating log.

During unloading operations, any spills or leaks are washed into a sump located in the unloading area which is curbed and sloped to prevent the run-off of spilled materials. Sump contents will be transferred to and treated in the existing treatment system. In case of a listed waste (except K062), any spills or leaks which are washed into the sump will be collected for proper management as a listed waste. The sump is made RCRA-empty before proceeding with the unloading of the next bulk tanker.

F-4a(ii) Container Management Facility

Containers of hazardous wastes are typically delivered to the Container Management Facility at the two loading docks located in the southeast corner of the building. The transfer of these containers to vehicles which will transport the wastes to off-site treatment, recovery, or disposal facilities also typically takes place at these loading docks. The loading docks have containment for any spills or leaks that may occur during loading/unloading and bulking operations. The procedures for loading or unloading containerized wastes are as follows:

- After the truck has come to a complete stop at the loading/unloading dock, the wheels are chocked. The truck brakes are set if the loading/unloading occurs at the rolling door entrance to the south of the container facility.

- Prior to unloading operations, the receiving tank (#28) is checked to ensure there is sufficient capacity for a material transfer. Overfill protection is ensured by presence of a float valve on the receiving tank.

- The transfer operations are regularly monitored by CMF operators and/or drivers to ensure quick detection of any spill or leakage.

- The volume of material loaded/unloaded is properly recorded.

F-4b Runoff [40 CFR 270.14(b)(8)(ii)]

Runoff from the container management facility, the secondary treatment building (#1), the tank farm building (#2), and the filter press building is prevented due to the presence of a roof over these areas.

Runoff from the primary treatment area is contained within the concrete diking that surrounds this area.

Runoff from the tanker unloading containment area is prevented by the existence of curbing that surrounds the entire tanker unloading area.

Runoff from the rest of the facility , i.e., areas where hazardous waste management does not occur, is directed to storm sewers.

Spill control structures, as described in the above paragraph, are inspected daily for corrosion, cracks, and signs of spills or leaks.

F-4c Water Supply [40 CFR 270.14(b)(8)(iii)]

The contamination of water supplies is averted at the facility by the prevention of spills, leaks, or contaminated runoff from discharging onto unprotected ground. The concrete paving, containment structures, drainage control features, and spill response procedures all serve to reduce the potential of water supplies becoming contaminated from waste handling activities at the site. Aside from the above outlined equipment and procedures to prevent the contamination of water supplies, it is noteworthy that there are no known water wells and/or ponds, rivers, lakes, or other types of water bodies in the vicinity of this facility to which this regulation may apply.

F-4d Equipment and Power Failure [40 CFR 270.14(b)(8)(iv)]

Treatment processes and all other facility operations rely on properly functioning equipment and a reliable supply of electricity. All processing equipment and instrumentations are checked prior to starting up the process to assure that they are in good operating condition. Any malfunctioning equipment will be identified and repaired. Routine maintenance, according to an established schedule, also assures that equipment in good condition is available during treatment processes.

If a power failure occurs at the facility, all treatment processes cease operation. No adverse results will occur from a power failure.

F-4e Personal Protective Equipment [40 CFR 270.14(b)(8)(v)]

The personal protective equipment that is available to facility personnel to prevent exposure to hazardous waste include Scott air packs, full/half face respirators, air-supplied respirators, hard hats, safety glasses, body suits, boots, aprons, and gloves. First aid supplies, eye-wash stations and safety showers are also available to minimize injuries in case of accidents. Employees are trained in the proper use of these equipment and in the chemical and physical hazards of the wastes that are handled at the facility.

F-5 GENERAL PRECAUTIONS TO PREVENT IGNITION OR REACTION OF IGNITABLE OR REACTIVE WASTES, AND MIXING OF INCOMPATIBLE WASTES [40 CFR 270.14(b)(9) and 264.17(b)]

A variety of precautions have been implemented at Dynecol to prevent the ignition or reaction of ignitable or reactive wastes, and mixing of incompatible wastes. One of the first of these precautions is the proper characterization of incoming wastes through the use of applicable analytical data that provide complete information on the physical and chemical properties of these wastes. Radioactive wastes and explosive wastes will not be accepted at the facility. Waste characterization helps to determine which wastes can be compatibly and safely mixed and where wastes can be stored to avoid reactions occuring during storage from incompatible waste types. The second precaution entails proper segregation of incompatible waste types through the use of separate storage bays in the container management building. The secondary containment system that is provided for each bay also prevents the possibility of incompatible wastes mixing.

The third precaution involves the use of a proper labeling system throughout the facility. Areas at the facility where ignitable or reactive wastes are being stored are appropriately identified through the use of labels or signs. In addition to the total site ban on smoking, "No Smoking" signs are prominently displayed in areas where a hazard exists from ignitable or reactive wastes. Ignitable wastes are also separated or protected from sources of ignition, such as open flames, cutting and welding, hot surfaces, frictional heat, sparks, spontaneous ignition, and radial heat. If any type of work is to be done in these waste storage areas, a "hot permit" must first be obtained from management to ensure that all work within the storage areas conform to these necessary hazard prevention procedures.

Another procedure that can be utilized to prevent adverse reactions resulting from the mixture of incompatible wastes is to combine very small quantities of those wastes being considered for mixing to determine their compatibility. This procedure is accomplished under a hood in Dynecol's laboratory. Employees are trained in safe waste handling procedures, including those procedures for handling ignitable and reactive wastes.

F-5a Management of Ignitable or Reactive Wastes in Containers [40 CFR 270.15(c) and 264.176]

Containers of ignitable or reactive wastes are stored in separate storage bays within the container storage facility. Figure F.1 demonstrates that the storage of these containers takes place more than 50 feet away from the facility's property lines. The labeling, sealing, handling, stacking, and storing of these containers are done in a manner that minimizes the possibility of these wastes experiencing any fires, explosions, or reactions. Wastes are stored in accordance with the segregation scheme and the compatibility matrix as described in Section C.

F-5b Management of Incompatible Waste in Containers [40 CFR 270.15(d) and 264.177]

Several precautionary measures have been implemented for the hazardous waste container management facility to assure that incompatible wastes do not come into contact with each other. Wastes are not placed into unwashed containers which formerly held incompatible wastes or materials. Incompatible wastes are stored in separate storage bays with separate containment systems within the facility. The Waste Analysis Plan provides a description of the procedures Dynecol follows in assuring that incompatible wastes are properly isolated in the storage bays.

Please refer to page B-8 for original.

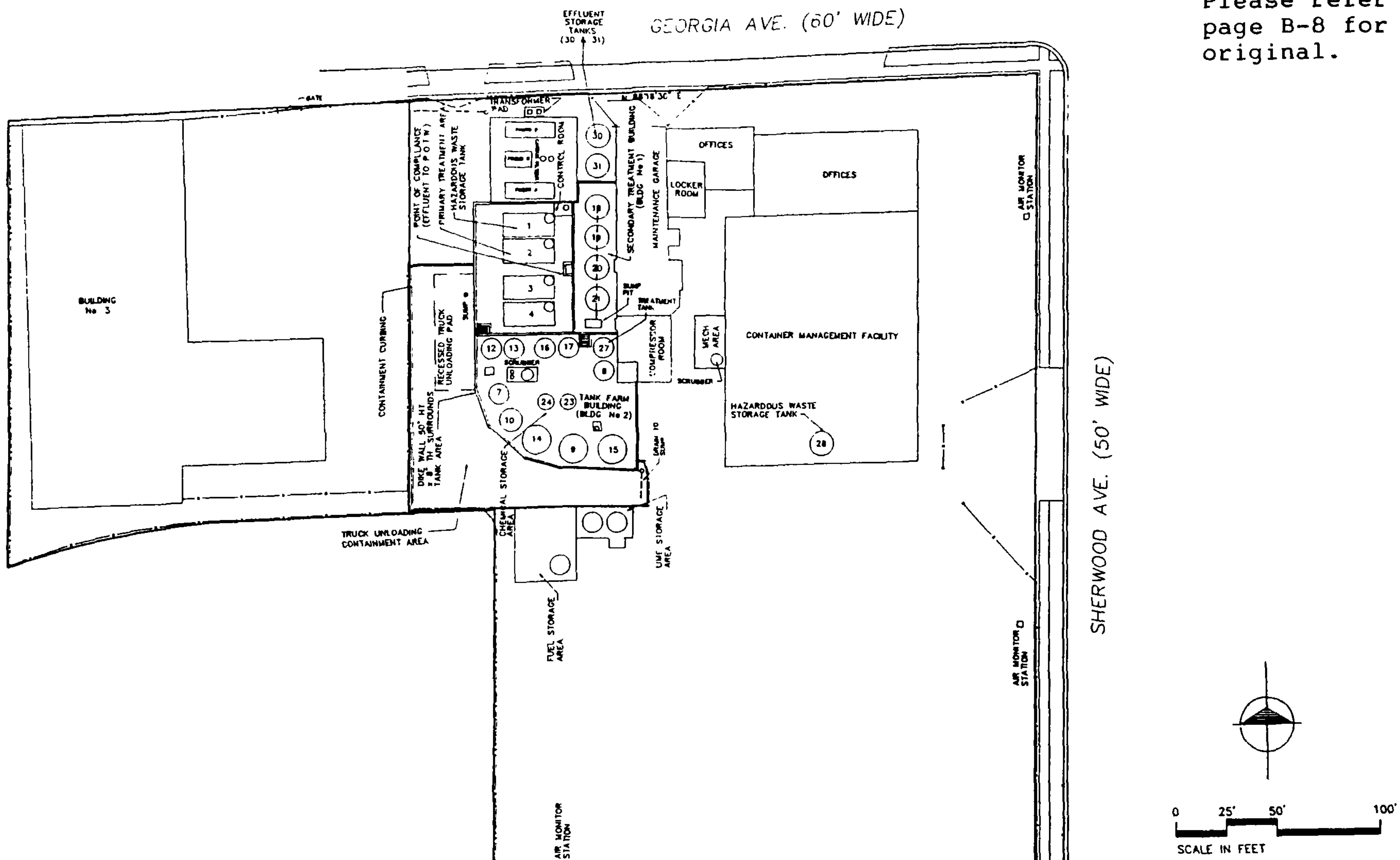


FIGURE B.3, G.1, F.1

SITE PLAN

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER 1994

EARTH TECH 14496 Sheldon Road Suite 210 • Plymouth, MI • (313) 416-5672

Wastes are stored in accordance with the segregation scheme and the compatibility matrix as referenced in Section C.

F-5c Management of Ignitable or Reactive Wastes in Tanks [40 CFR 270.16(f) and 264.198]

Ignitable wastes (D001) and reactive wastes (D003), as defined under 40 CFR 261.21 and 261.23, respectively, are not treated at Dynecol.

F006/F019 wastes containing reactive cyanide in excess of 20 ppm are not accepted for treatment by Dynecol.

F-5d Management of Incompatible Wastes in Tanks [40 CFR 270.16(f) and 264.199(b)]

Unloading procedures have been developed in order to prevent incompatible wastes from coming into contact in the same tank with a heel of a previously treated waste. Detailed information is provided in Section D-2f.

Detroit Public Library

SECTION G

CONTINGENCY PLAN

This Contingency Plan has been prepared in accordance with the requirements of 40 CFR 264 Subpart D and Act 451 to establish the necessary planned procedures to be followed in the event of an emergency situation at the facility, such as fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water.

As required by 40 CFR 264.53 and Act 451, a copy of this Contingency Plan (and all amendments to the plan) is maintained at the facility and has been submitted to the local police department, fire department, and local emergency response teams that may be called upon to provide emergency service.

G-1 GENERAL INFORMATION [40 CFR 264.51]

The plans and procedures described herein have been prepared in accordance with the applicable regulations and have been designed to minimize hazards to human health and the environment from any unplanned, sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water. The procedures established in this plan have been developed to protect Dynecol employees, properties, and the general public and will be implemented by plant personnel in the event of a potential or actual release of hazardous wastes or hazardous waste constituents which may threaten human health or the environment.

Dynecol, Inc. is located at 6520 Georgia in Detroit, Michigan. The facility treats and stores certain hazardous waste streams in tanks and stores containerized wastes in an enclosed building prior to disposal or treatment at designated facilities. Figure G.1 contains a general site plan of Dynecol, illustrating the locations of the treatment and container management facilities.

G-2 EMERGENCY COORDINATORS [40 CFR 264.52(d) and 264.55]

At all times there is at least one employee, either on the facility premises or on call and within reasonable travel distance of the facility, with the responsibility for coordinating all emergency response measures. The list of Emergency Coordinators is contained in Table G.1. Qualified persons have been designated as the primary and alternate Emergency Coordinators. Their names, addresses, and telephone numbers are arranged in the order in which they would assume the responsibilities of Emergency Coordinator.

If an emergency situation develops at the facility, the discoverer must immediately contact the primary Emergency Coordinator or the alternate Emergency Coordinator if the primary Emergency Coordinator is unavailable. The primary and alternate Emergency Coordinators are thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities of the facility, the location of all records within the facility, and the facility layout. The Emergency Coordinators have complete authority to commit resources of the company that may be needed to carry out the Contingency Plan. The Emergency Coordinator's responsibilities are specified under the emergency response procedures contained in this plan.

Please refer to page B-8 for original.

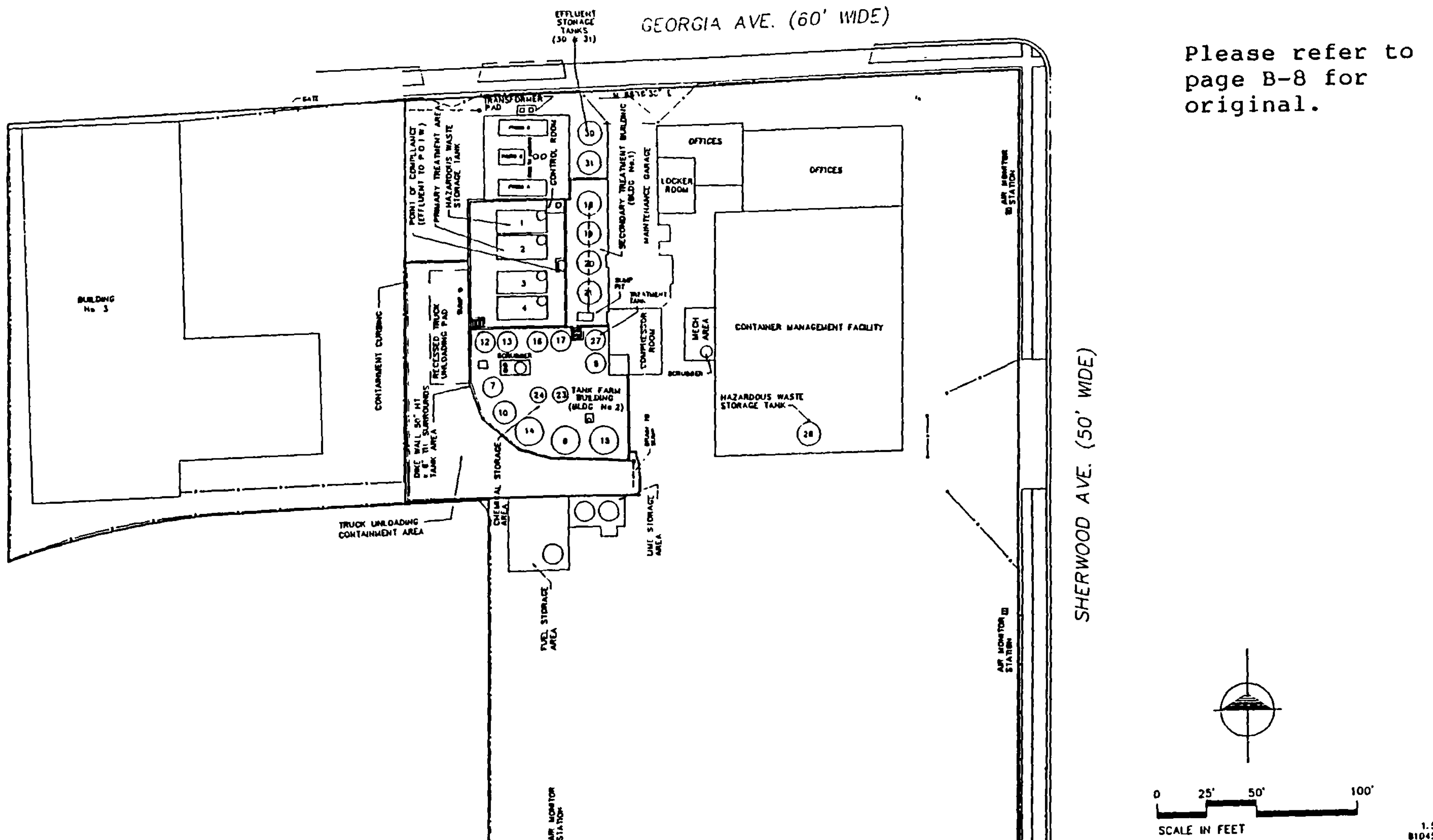


FIGURE B.3, G.1, F.1

SITE PLAN

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER 1994

EARTH TECH 14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

Table G.1
Emergency Notification Telephone Numbers

NAME/ADDRESS	OFFICE PHONE	HOME PHONE
1. Emergency Coordinators		
Dave Lobbestael 40260 Regency Sterling Heights, MI 48313	(313) 571-7141	(810) 939-1748
Rick Meirow, 1st Alternate 28012 Elba St. Clair Shores, MI 48081	(313) 571-7141	(810) 774-9655
Keith Olsen, 2nd Alternate 10088 King Road Davisburg, MI 48350	(313) 571-7141	(313) 625-5327
Frank Biermann, 3rd Alternate 240 Grosse Pointe Blvd. Grosse Pointe Farms, MI 48236	(313) 571-7141	(313) 885-1568
2. Spill Cleanup Contractors		
M.L. Chartier 9195 Marine City Hwy. Fairhaven, MI 48023	(810) 725-8373	
H & M Environmental Services 230 North Ave., Suite 12 Mt. Clemens, MI 48043	(810) 469-0041	
3. Fire or Police	**911**	
4. Medical Emergency		
Mercy Occupational Medical Services (MOMS) 5555 Conner Ave. Detroit, MI 48213	(313) 579-6667	
Holy Cross Hospital 4777 E. Outer Drive Detroit, MI 48234	(313) 369-9100	

Table G.1
Emergency Notification Telephone Numbers
(continued)

NAME/ADDRESS	OFFICE PHONE
5. Detroit Water and Sewerage Department	
Industrial Waste Control Division	(313) 297-9402
System Control	(313) 224-4775
6. Wayne County Air Pollution Control	
Business Hours	(313) 833-7030
Evening Hours	(313) 833-0075
7. Michigan Department of Environmental Quality	
Spill Response (PEAS)	(800) 292-4706
SE Michigan Field Office	(313) 953-0241
Lansing Office	(517) 373-2730
8. U.S. Environmental Protection Agency	
National Response Center	(800) 424-8802
Local Office (Grosse Isle)	(313) 676-6500
9. U.S. Coast Guard	
Business Hours	(313) 568-9470
Evening Hours	(313) 568-9464
10. Poison Control Center	(800) 462-6644
	(313) 745-5711

G-3 IMPLEMENTATION OF CONTINGENCY PLAN [40 CFR 264.51(b) and 264.56(d)]

The decision of the Emergency Coordinator to implement this plan depends upon whether or not the potential or actual incident could threaten human health or the environment. The following situations are provided as guidance to plant personnel as to the conditions or circumstances under which the plan must be implemented:

Fire and/or Explosion

- A fire causes the release of toxic fumes.
- The fire spreads and could possibly ignite materials at other locations on-site or could cause heat-induced explosions.
- The fire could possibly spread to off-site areas.
- The use of water or water and chemical fire suppressant could result in contaminated runoff.
- An explosion has occured or an imminent danger exists that an explosion could occur, thereby releasing toxic material.

Spill or Release of Hazardous Waste During Unloading Operations

- The spill or release causes bodily injury or is an imminent threat to human health due to the evolution of reactive or toxic liquids, mist, or fumes or contact with reactive or toxic liquid or spray.
- The spill or release has the potential to, or actually does, overflow the secondary containment structures and exits the facility, either alone or in combination with storm water, potentially resulting in off-site soil contamination or water pollution.
- The spill or release is contained on site but could cause either ground water contamination or air pollution.

Spill or Release of Hazardous Waste Within the Secondary Containment Structure

- The spill or release causes bodily injury or is an imminent threat to human health due to the evolution of toxic or reactive liquids, fumes or mist or contact with toxic or reactive liquid or spray.

- The spill or release cannot be immediately transferred to an appropriate tank for storage.
- The spill or release threatens the integrity of storage tanks or other facility equipment or structures.

G-4 EMERGENCY RESPONSE PROCEDURES

The following general procedures have been established for implementation by plant personnel and the Emergency Coordinator in order to efficiently respond to the release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

All emergencies require prompt and deliberate action. In the event of any major emergency, an established set of procedures will be followed. These procedures will be followed as closely as possible. In specific emergency situations, however, the Emergency Coordinator may deviate from established procedures to provide a more effective plan for bringing the situation under control.

G-4a Notification

The list of emergency contacts contained in Table G.1 provides a ready reference for plant personnel and Emergency Coordinators in the event of an imminent or actual emergency situation at the facility which will require immediate response. In the event of an emergency situation, the Emergency Coordinator will be notified first. All other facility personnel, local emergency response agencies, and state and federal authorities will be promtly notified as directed by the Emergency Coordinator.

G-4b Identification of Hazardous Materials [40 CFR 264.56(b)]

The Emergency Coordinator will immediately identify the type, exact source, amount and extent of any released materials. The Emergency Coordinator is familiar with the facility and the types of wastes which are handled. The initial identification will be made by observation of the materials involved, the source, and the location of the release. The tanks, piping, and containers are labeled to facilitate the identification of released materials. If visual identification cannot be made, samples of the released materials will be identified by chemical analysis.

G-4c Assessment [40 CFR 264.56(c) and (d)]

The Emergency Coordinator will assess possible hazards, both direct and indirect, to human health or the environment that may result from the release of the identified material or from the fire or explosion. The assessment will consider the effects of any gases that may be generated, the effects of hazardous surface runoff from water or chemical reagents used to control the fire, and the effects of any chemical or physical reactions on equipment or structures.

If the Emergency Coordinator's assessment indicates that evacuation of local areas may be advisable, the appropriate local authorities will be immediately notified. The Emergency Coordinator will assist these authorities in deciding whether evacuation is indicated and what areas may need to be evacuated. The National Response Center (see Table G.1) will also be immediately notified, and the following information will be provided:

- name and telephone number of reporter;
- name and address of facility;
- time and type of incident (e.g., release, fire, explosion);
- name and quantity of materials involved, to the extent known;
- extent of injuries, if any; and
- possible hazards to human health or the environment, outside of the facility.

G-4d Control Procedures [40 CFR 264.52(a)]

Whenever there is an imminent or actual emergency situation where the potential or actual release of hazardous materials may threaten human health or the environment:

- The plant personnel who discover the situation will activate the emergency alarm system, thereby alerting the Emergency Coordinator or designate who can then contact the Emergency Coordinator by telephone.
- The Emergency Coordinator or designate will contact the appropriate spill cleanup contractors, and state or local agencies, if their assistance is needed.
- In the event that an individual or individuals have come in contact with acids or alkalis, plant personnel will immediately assist the victim to the emergency eyewash or shower where the affected area will be rinsed with water. Other injured personnel will also receive immediate first aid or medical attention. If necessary, the hospital or clinic will be notified immediately. The safety of personnel and other individuals will be the first concern of the Emergency Coordinator.
- All emergency response personnel will utilize personal protective equipment including gloves, boots, goggles, or face shields, aprons, and other equipment appropriate to the emergency.

- All nonessential personnel will be evacuated from the immediate area of the emergency. If total plant evacuation is indicated, the evacuation procedures summarized in Section G-7 will be followed.
- Any processes or operations that may interfere with emergency response will be stopped. Valves, pipes, and other equipment will be monitored for leaks, pressure build-up, gas generation, or ruptures.
- The character, source, and extent of the emergency will be evaluated. The actual or potential release of hazardous wastes will be identified.
- Fire extinguishers or water hoses will be utilized by trained personnel to contain the spread of fire, if appropriate. Upon the arrival of the fire department, the directions of the fire chief will be followed in handling the emergency.
- All measures will be undertaken to prevent the contact of any released material with incompatible materials, such as corrosive material with water, skin, eyes, and metals and flammable materials with any spark-emitting sources or open flames.
- Released materials that are not contained will be prevented from entering any external drains, through the use of such items as oil booms or dams and inert absorbent materials suitable to the released materials. The release of corrosive materials will be cautiously and slowly neutralized (acids with an alkaline compound and alkaline solutions with a dilute acidic material). Spark-proof equipment will be used to remove flammable materials.
- If necessary, the area will be roped off to limit access to the area until the emergency has been cleared and the area cleaned. Ventilation will be provided to the area if indicated by the presence of vapor-emitting materials, such as acids or volatile compounds.
- For emergency situations involving tanks, any materials released into the secondary containment system will be pumped out and disposed of according to applicable regulations. No materials will be placed into a defective tank or associated piping until repairs have been made to eliminate the potential for leakage, corrosion, or explosion.
- For emergency situations involving drums or containers during storage, any materials released into the secondary containment system will be pumped out and disposed of according to applicable regulations. Leaking or potentially leaking drums or containers will be placed into a recovery drum or repackaged in a suitable container. Proper labels will be affixed.
- The spill area will be washed with water and appropriate surfactants. After the spill area has been cleaned, the Emergency Coordinator will determine if the area is safe to return to normal use.
- All safety and emergency equipment will be decontaminated and thoroughly cleaned before being placed back into storage. Used spill response materials and those materials that cannot be decontaminated will be appropriately disposed of and replaced with new emergency response materials and equipment.

G-42e Prevention of Recurrence or Spread of Fires, Explosions or Releases [40 CFR 264.56(e)]

During an emergency, the Emergency Coordinator must take all reasonable measures necessary to ensure that fires, explosions or releases do not recur or spread to other areas of the plant or off the plant site. Some actions which might be employed include:

- shut off pumps, valves, or air supply lines if required to stop the releases;
- actuate sump pumps to transfer accumulated runoff into available tanks;
- place portable pumps in service to transfer accumulated runoff;
- deploy suitable containment materials to erect temporary dams in the path of the flow of released materials; and
- spread suitable neutralizing agents on contained spills.

G-4f Storage and Treatment of Released Materials [40 CFR 264.56(g)]

Immediately after an emergency, the Emergency Coordinator will make arrangements for the treatment, storage, or disposal of recovered waste or any other contaminated materials. The treatment, storage, or disposal of recovered wastes and contaminated materials will be conducted in accordance with applicable regulations governing the management of these materials.

The Emergency Coordinator will determine the regulatory status of the released substance and associated spill cleanup materials. This determination will be made according to the following guidelines:

- If the material is from a spill of a listed hazardous waste, defined in 40 CFR 261 or Act 451, then the cleanup materials, spill residues, and other contaminated materials must be managed as hazardous wastes.

- If the material is from a spill of a commercial chemical product that is listed under 40 CFR 261 or Act 451, then the cleanup materials, spill residues, and other contaminated materials must be managed as hazardous wastes.

- If the material is from a spill of a waste that possesses hazardous characteristics, defined in 40 CFR 261 or Act 451, then the cleanup materials, spill residues, and other contaminated materials must be managed as hazardous wastes if these materials also possess hazardous waste characteristics. Analytical testing may have to be undertaken in order to make this determination.

G-4g Incompatible Wastes [40 CFR 264.56(g)(1)]

The Emergency Coordinator will ensure that, in the affected area(s) of the facility, no wastes which may be incompatible with the released materials will be treated, stored, or disposed of until cleanup procedures are completed.

G-4h Post-Emergency Equipment Maintenance [40 CFR 264.56 (h) (2)]

After an emergency event, all relevant emergency equipment will be replaced or cleaned so that it is fit for use. Before operations are resumed, an inspection of all safety equipment will be conducted. The US EPA Regional Administrator, the MDEQ, and local authorities will be notified by the Emergency Coordinator that post-emergency equipment maintenance has been performed and operations at the facility will be resumed.

G-4i Container Spills and Leakage [40 CFR 264.171]

Refer to Section G-4d for a detailed description of the emergency response procedures for container spills and leakage. If a container holding hazardous waste is not in good condition or it begins to leak, the hazardous waste from this container will be transferred to a container in good condition. A leaking 55-gallon drum may also be placed within a larger recovery drum.

G-4j Tank Spills and Leakage [40 CFR 264.196]

Refer to Section G-4d for a detailed description of the emergency procedures for tank spills and leakage.

A tank system or secondary containment system from which there has been a leak or spill will be removed from service immediately and the additional provisions of 40 CFR 264.196 will be followed prior to further use of the system in question.

G-5 EMERGENCY EQUIPMENT [40 CFR 264.32 and 264.52]

G-5a Internal Communication

Internal communication is provided by means of the facility telephone, paging systems and portable two-way radios. An internal alarm system capable of providing immediate emergency signals to facility personnel is available on site. The locations of the alarm actuators are indicated in Table G.2.

G-5b External Communication

External communication is also provided through the facility telephone system (as described in Section G-5a above).

G-5c Access to Communication and Alarm Systems

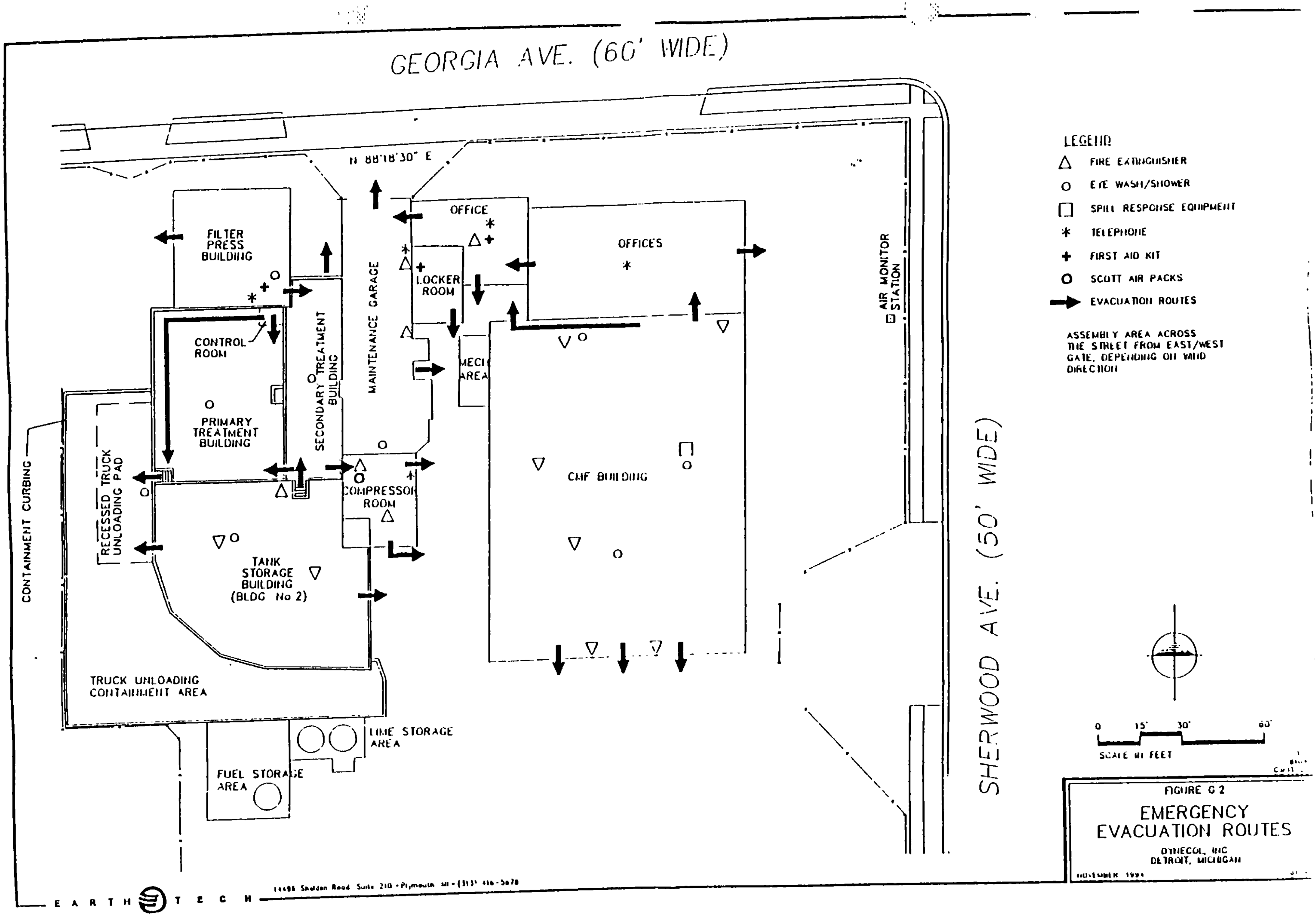
All facility personnel have prompt access to the internal alarm system actuator buttons and telephone system since they are located in areas where personnel would be carrying out their duties.

G-5d Emergency Equipment

Portable fire extinguishers (Classified for Class A, B, and C fires with capacity of 20 pounds) are located throughout the facility. Their locations at the facility are summarized in Table G.2 and illustrated in Figure G.2.

Table G.2
Emergency Equipment [40 CFR 264.52(e)]

Item	Location
Alarm Actuators	
1	Office Area
2	Containment wall - S.E. corner
3	Top of primary treatment tanks
4	Bottom of primary treatment tanks
5	Unloading pad
6	Inside Building 2
7	Inside Building 2
8	2nd treatment building - east wall
9	Plant receiving area
10	Container management building
Fire Extinguishers	
1	Office area
2	Truck washout area - office door
3	Truck washout area - east door
4	Truck washout area - west door
5	Compressor room
6	Building 2, near Tank #8
7	Building 2, near Tank #7
8	Fuel tank area
9	Container management building
Water Supply for Fire Control	
3/4" Valve	Truck washout building, office door
3/4" Valve	Truck washout building, south door
3/4" Valve	Compressor room
3/4" Valve	2nd treatment area, west wall
3/4" Valve	Building 2, upper level, west wall
3/4" Valve	Container management building
2" Valve	Building 2, first level, by Tank #7
2" Valve	Press building, east wall
2" Valve	2nd Treatment area, east wall
2" Valve	Top of primary treatment tank
2" Valve	Unloading pad
2" Valve	Truck washout area, south wall
3" Valve	Primary treatment area, east wall


GEORGIA AVE. (60' WIDE)
N 88°18'30" E
SHERWOOD AVE. (50' WIDE)
FILTER PRESS BUILDING
CONTROL ROOM
PRIMARY TREATMENT BUILDING
SECONDARY TREATMENT BUILDING
MAINTENANCE GARAGE
OFFICE
LOCKER ROOM
OFFICES
MECH AREA
CMF BUILDING
COMPRESSOR ROOM
TANK STORAGE BUILDING (BLDG No 2)
RECESSED TRUCK UNLOADING PAD
CONTAINMENT CURBING
TRUCK UNLOADING CONTAINMENT AREA
LIME STORAGE AREA
FUEL STORAGE AREA
AIR MONITOR STATION
LEGEND
FIRE EXTINGUISHER
EYE WASH/SHOWER
SPILL RESPONSE EQUIPMENT
TELEPHONE
FIRST AID KIT
SCOTT AIR PACKS
EVACUATION ROUTES
ASSEMBLY AREA ACROSS THE STREET FROM EAST/WEST GATE, DEPENDING ON WIND DIRECTION
0 15' 30' 60'
SCALE IN FEET
FIGURE G 2
EMERGENCY EVACUATION ROUTES
DYNECOL, INC
DETROIT, MICHIGAN
NOVEMBER 1994
EARTH TECH

Portable spill control equipment and materials include:

* Soda ash bags stored in Building #3; and

* Portable gasoline powered and air powered diaphragm pumps and related hosing and couplings stored in Building #3; and

* Shovels and squeegees kept at various areas within the facility; and

* Spill control kit stored in container management building.

Decontamination equipment and personal safety equipment are provided at the facility as follows: emergency showers and eyewash stations located at the south wall of the truck washout area, at the south side of the scrubber in Building 2, at the east wall of the press building (upper level), in the container management building (by the loading/unloading area, the bulk/transfer area, and bay #1), at the truck unloading pad, and in the primary treatment area; and two Scott air packs with a 30 minute air supply located on the north wall of the electrical room behind the treatment garage. Personal full/half faced respirators are kept individually by relevant employees in their lockers.

G-5e Water for Fire Control

Water is provided to the facility from the City of Detroit water supply mains. Water supply is available within the facility at the locations indicated in Table G.2. Water hoses and couplings are available at the facility and are accessible for immediate use. The container management facility is equipped with an automatic, foam-water, closed head sprinkler system that is supplied by an eight-inch water main. The capacity is 0.30 gpm/sf plus an allowance of 750 gpm for fire department uses. Storage bay #1 in the container facility is equipped with a sprinkler system that is composed of 6 50 pound-dry ANSUL chemical fire suppression canisters.

G-5f Aisle Space Requirements

Access into the facility and movement within the facility is maintained free and clear of obstructions in order to allow free movement of personnel, emergency and/or fire protection equipment, and spill control/decontamination equipment within the facility. Aisles and walkways between tanks and equipment in both the storage and process areas are maintained free and clear of obstructions for the same purposes as described earlier.

G-5g Emergency Equipment Inspection and Maintenance

All facility alarm systems, fire protection equipment, spill control equipment, and decontamination equipment are inspected, tested, and maintained on a regular basis to ensure proper operation during an emergency. Section F provides more details regarding inspection schedules and procedures.

G-6 COORDINATION AGREEMENTS [40 CFR 264.52 (c) and 264.37]

Copies of the Contingency Plan are provided to emergency response agencies in order to familiarize them with the facility layout, the properties of materials handled, locations of working area, access routes into and within the facility, possible evacuation routes from the facility, and types of injury or illness which could result from releases of materials at the facility.

This information is submitted to:

Detroit Fire Department
Fire Marshall Division
250 W. Larned Street
Detroit, MI 48226
ATT: Captain Ameer Azaad

Detroit Police Department
Precinct #9
11187 Gratiot Ave.
Detroit, MI 48213
ATT: Officer Dan Miller

H & M Environmental Services
230 North Ave., Suite 12
Mt. Clemens, MI 48043
ATT: Mr. Steven H. Matthes

M.L. Chartier
9195 Marine City Hwy.
Fairhaven, MI 48203
ATT: Mr. Todd Chartier

The local hospital and clinic have been contacted to familiarize each with the properties of wastes or other materials which are handled at Dynecol. Material safety data sheets, outlining the potential hazards of these materials, have been submitted to:

Mercy Occupational Medecine Service
5555 Conner Avenue
Detroit, MI 48213
Attn: Ms. Debra Vericker

Holy Cross Hospital
4777 East Outer Drive
Detroit, MI 48234
Attn: Mr. Bill Sherman

Documentation that these organizations have received copies of this Contingency Plan or material safety data sheets can be found in * Appendix G.1. (Not included as License Attachment, DPO 7/28/97)

G-7 EVACUATION PLAN [40 CFR 264.52(f)]

The Emergency Coordinator is responsible for determining which emergency situations require plant evacuation. An audio alarm, portable two-way radios, and the facility telephone/paging system will be used to notify personnel as to the nature of the emergency and recommended plan of action.

In the event that all reasonable measures fail to control the emergency situation or if human health or the environment outside the facility is threatened, the Emergency Coordinator will:

* Commence the signal for plant evacuation and notify employees, contractors, and visitors to evacuate the facility through exits determined to be safe at the time of the emergency (See Figure G.2 for evacuation routes and designated assembly areas);
* Immediately direct that no further entry of visitors, contractors, or vehicles be permitted. All vehicle traffic movement within the facility will cease in order to allow the access of emergency equipment;
* Disallow any persons to remain or re-enter the facility unless specifically authorized by the Emergency Coordinator. The Emergency Coordinator will then direct and assume responsibility for those persons remaining or re-entering the facility;
* Maintain communication with evacuated supervisors to determine if all employees, contractors, and visitors are present and accounted for in the designated assembly areas.

Supervisors will begin to prepare a list of employees present in the assembly areas and those individuals that should be present but are not. Accounting for the presence of visitors will be the responsibility of the employees they are seeing. The accounting for the presence of contractors will be the responsibility of those personnel supervising the individual contracts. Truck drivers will be the responsibility of the supervisor where the truck is loading or unloading;

* Receive the final tally of persons not accounted for in the evacuation assembly areas. No attempt will be made to locate persons not accounted for unless it can be done without endangering others and the search has been directed by the Emergency Coordinator;

* Determine whether evacuation of the areas surrounding the facility should be initiated. Local emergency response agencies will be immediately contacted, and the Emergency Coordinator will assist these agencies if it is determined that it is necessary to initiate evacuation; and

* Give a signal or other notification to indicate that the facility is safe and cleared for re-entry.

G-8 REQUIRED REPORTS [40 CFR 264.56 (i) and (j)]

In the event of an emergency situation that requires implementation of the contingency plan, the Emergency Coordinator must make the following notifications:

* Record in the facility's operating record the time, date, and description of any incident that requires the implementation of this plan.

* Notify the EPA Regional Administrator and the MDEQ Director that the facility has complied with the following provisions:

  - No waste that may be incompatible with the released materials has been (or will be) stored, treated or disposed of in the affected area(s) until cleanup procedures have been completed.

  - All emergency equipment listed in this plan has been (or will be) cleaned and fit for its intended use prior to resumption of operations.

* Within 15 days after the incident, submit a written report to:

- U.S. EPA Region 5
  77 W. Jackson Blvd.
  Chicago, IL 60604

- Director
  Michigan Department of Environmental Quality
  P.O. Box 30241
  Lansing, MI 48909

This report must include the following information:

- Name, address, telephone number of the facility and the owner or operator;
- Date, time, type of incident;
- Type and quantity of materials involved;
- Extent of injuries, if any;
- Assessment of actual or potential hazards to human health or the environment; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

G-9 AMENDMENT OF THE CONTINGENCY PLAN [40 CFR 264.54]

This contingency plan will be reviewed and amended whenever:

- The facility permit is revised;
- Applicable regulations are revised;
- The plan fails in an emergency;
- The facility changes in design, construction, operation, maintenance or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in any emergency;
- The list of emergency coordinator changes; or
- The list of emergency equipment changes.

SECTION H

PERSONNEL TRAINING

The information contained in this section outlines the personnel training program for Dynecol's hazardous waste treatment and storage facility in accordance with the requirements of Michigan Act 64, Rules 299.9504 and 299.9508 which incorporate 40 CFR 270.14(b)(12) and 264.16 by reference.

H-1 OUTLINE OF TRAINING PROGRAM [40 CFR 264.16(a)(1)]

Training is provided to Dynecol personnel in order to teach them to perform their duties in a way that ensures:

- Proper operational, maintenance, and inspection procedures are routinely implemented to minimize the possiblity of a release of hazardous waste or hazardous waste constituents which could threaten human health, property, or the environment; and

- Facility personnel are familiar with the provisions of the Contingency Plan, and are able to respond efficiently in the event of an emergency in order to minimize hazards to human health, property, or the environment.

The introductory and continuing training programs are directed by a person who is trained in hazardous waste management procedures and is familiar with the facility, its operations, and the emergency procedures and equipment described in both Section F (Procedures to Prevent Hazards) and Section G (Contingency Plan). Table H.1 provides an outline of the hazardous waste management training program for Dynecol.

H-1a Job Titles and Descriptions [40 CFR 264.16(d)(1) & (2)]

Table H.2 provides a summary of job titles and descriptions of those positions that involve any aspect of hazardous waste management at Dynecol.

H-1b Training Program [40 CFR 264.16]

During the training program, employees are instructed on the provisions of the Contingency Plan; the hazardous nature of chemical and chemical wastes in general; the purpose of RCRA and Michigan Act 64 along with the importance of complying with the hazardous waste regulations; the proper and safe handling and storage procedures for wastes; the proper and safe handling and storage procedures for ignitable, reactive, and incompatible wastes; emergency response procedures; and location of all emergency equipment and structures available on the site. On-the-job training is received by all personnel on activities appropriate to each job description. Those training elements of the program that address non-routine and emergency situations include:

- Use of personal protective equipment;
- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

- Key parameters for automatic cut-off systems;
- Communications or alarm systems;
- Responses to fire or explosions;
- Response to groundwater contamination incidents;
- Shutdown of operations.

H-2 IMPLEMENTATION OF TRAINING PROGRAM [40 CFR 264.16(b) and 264.16(d)(4)]

Facility personnel must successfully complete their training within six months after the date of their employment or assignment to the facility, or to a new position at the facility. New employees having hazardous waste management responsibilities will work under supervision until they have completed the training program. Employees are required to review the training program on an annual basis, and sometimes more frequently if change(s) to regulations or operations occur prior to the annual review.

Training records on current personnel are maintained at the facility until facility closure. Training records on former employees are kept for three years from the date the employee last worked at the facility. Records documenting the training are maintained for each employee with the name of the employee, job title, job description, date of employment or assignment, date of training, name and title of instructor, signatures of instructor and employee contained on a form (See Table H.3).

The hazardous waste training program at Dynecol is directed by Mr. Tien Pham, Regulatory Compliance Manager. Mr. Pham is knowledgeable about the facility's operations and familiar with the hazardous waste management regulations.

Table H.1
Outline of
Hazardous Waste Management Training Program
for Dynecol, Inc.

1. Safety and Health
   a. Health Protection
   b. Safety Procedures

2. Emergency Response
   a. Emergency Evacuation and Emergency Control Program
   b. Contingency Plan
      i) Emergency coordinator
      ii) Emergency procedures
      iii) Emergency communications/phone numbers and alarms
      iv) Location, maintenance, inspection and use of emergency equipment
      v) Waste feed cut-off systems
      vi) Spill response
      vii) Fires and explosions

3. RCRA/Act 64 Standards for Hazardous Waste Management
   a. Introduction to RCRA and Michigan Act 64
   b. Manifesting Requirements
   c. Recordkeeping and Reporting

4. Hazardous Waste Identification
   a. General Properties of Hazardous Wastes
   b. Hazardous Wastes Treated and Stored at Dynecol

5. Storage of Hazardous Wastes
   a. Use and Management of Drums
   b. Use and Management of Tanks
   c. Procedures for Handling Ignitable, Reactive, and Incompatible wastes

6. Treatment of Hazardous Wastes
   a. Primary Treatment
   b. Secondary Treatment
   c. Dewatering

7. Inspection
   a. General Inspection Requirements
   b. Container Inspection
   c. Tank Inspection
   d. Inspection Logs

8. Analytical Procedures
   a. Representative Sampling Method
   b. Fingerprint Testing Method

TABLE H.2
Waste Management Job Titles and
Description of Waste Management Responsibilities

1. **Job Title: President**
   Job Description: General Manager of the facility and transportation operations; assures compliance with all permits and regulations; manages employees and assets commensurate with financial, economic, legal, social, environmental, and business objectives.

2. **Job Title: Facility Manager**
   Job Description: Responsible for all aspects of operations in treatment and container management facilities, i.e., waste treatment and disposal, facility maintenance, safety, permit compliance, etc. Reports to President.

3. **Job Title: Supervisor, Treatment Operations**
   Job Description: Schedules and supervises treatment facility staff; designs and implements operating procedures for treatment activities; schedules receipt and shipment of wastes and/or reagents for the plant; ensures accuracy of paperwork, i.e., manifests, shippers, operating log; assists in coordination of staff training; ensures compliance with all applicable regulations and permits. Reports to Facility Manager.

4. **Job Title: Supervisor, Container Management Facility**
   Job Description: Schedules and supervises CMF staff; develops and implements operating procedures for CMF activities; controls CMF waste inventory management; responsible for proper storage, bulking, and transfer of CMF wastes; ensures compliance with all applicable regulations and permits. Reports to Facility Manager.

5. **Job Title: Supervisor, Facility Maintenance**
   Job Description: Schedules and supervises maintenance staff; develops and implements operating procedures for preventive maintenance, equipment service and repair; responsible for inventory control and overall apperance of facility; ensures completeness of maintenance and inspection logs; ensures compliance with all applicable regulations and permits; assists in design and installation of all facility equipment modifications. Reports to Facility Manager.

6. **Job Title: Treatment Plant Operator**
   Job Description: Responsible for the receipt, sampling, and processing of all incoming plant wastes; responsible for implementation of proper treatment procedures; responsible for initial waste evaluation and comparison with fingerprinting

Table H.2 (Continued)

information; monitors all plant treatment operations and environmental control systems to ensure effective operations within design tolerances; screens all incoming load paperwork to ensure all discrepancies are resolved prior to load acceptance; responsible for housekeeping for all treatment areas. Reports to Treatment Operations Supervisor.

7. **Job Title: Assistant Plant Operator**
   Job Description: Assists plant operator in the receipt, sampling, and processing of wastes; responsible for safe transfer of wastes and products; responsible for safe operation of equipment; acts as the attendant during tanker washouts; responsible for housekeeping duties for treatment plant area. Reports to Treatment Operations Supervisor.

8. **Job Title: CMF Warehouseman**
   Job Description: Assists in the implementation of standard operating procedures for CMF activities; assists in the screening and compositing of all inbound/outbound waste shipments; loads and unloads all inbound/outbound shipments; responsible for safe and efficient operation of all CMF equipment and facility maintenance; assumes supervisory responsibilities upon absence of CMF Supervisor. Reports to CMF Supervisor.

9. **Job Title: Technician**
   Job Description: Responsible for general facility cleanup and maintenance; assists as needed in both the treatment plant and CMF activities; responsible for safe operation of drum cleaning/crushing equipment in CMF; responsible for safe operation of fork lift and lawn cutting equipment. Reports to CMF/Treatment Operations Supervisor.

10. **Job Title: Maintenance Technician**
    Job Description: Performs all periodic inspections, preventive maintenance, and repair of all treatment plant equipment; assists in the implementation of standard operating procedures for maintenance/repair; assists in inventory control and maintenance of facility appearance. Reports to Facility Maintenance Supervisor.

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREE[illegible]
DETROIT, MICHIGAN 48[illegible]
(313) 571-7[illegible]

EMPLOYEE WASTE MANAGEMENT TRAINING RECORD

Name of Employee:____

Job Title:____

Date of Employment/Job Assignment:___________________

Date(s) of Training Program:__________________________

Type of Training(Check one):
____Initial Presentation [40 CFR 264.16(b)]
____Annual Review [40 CFR 264.16(c)]

Topics covered: See back for listing

****
CERTIFICATION OF TRAINING
****

This employee has successfully completed a training program that ensures the facility's compliance with requirements of 40 CFR 264.16 and MI Act 64 Operating License.

Name of Instructor:______________________________

Title of Instructor:_____________________________

Signature of Instructor:_________________________Date:____________

****
ACKNOWLEDGEMENT OF TRAINING
****

I acknowledge receipt of introductory/continuing training on areas relevant to my job description, and I am capable to perform my duties without direct supervision.

Employee Signature:______________________________

Date:______________________________

Outline of
Hazardous Waste Management Training Program
for Dynecol, Inc.

1. Safety and Health
   a. Health Protection
   b. Safety Procedures

2. Emergency Response
   a. Emergency Evacuation and Emergency Control Program
   b. Contingency Plan
      i) Emergency coordinator
      ii) Emergency procedures
      iii) Emergency communications/phone numbers and alarms
      iv) Location, maintenance, inspection and use of emergency equipment
      v) Waste feed cut-off systems
      vi) Spill response
      vii) Fires and explosions

3. RCRA/Act 64 Standards for Hazardous Waste Management
   a. Introduction to RCRA and Michigan Act 64
   b. Manifesting Requirements
   c. Recordkeeping and Reporting

4. Hazardous Waste Identification
   a. General Properties of Hazardous Wastes
   b. Hazardous Wastes Treated and Stored at Dynecol

5. Storage of Hazardous Wastes
   a. Use and Management of Drums
   b. Use and Management of Tanks
   c. Procedures for Handling Ignitable, Reactive, and Incompatible wastes

6. Treatment of Hazardous Wastes
   a. Primary Treatment
   b. Secondary Treatment
   c. Dewatering

7. Inspection
   a. General Inspection Requirements
   b. Container Inspection
   c. Tank Inspection
   d. Inspection Logs

8. Analytical Procedures
   a. Representative Sampling Method
   b. Fingerprint Testing Method

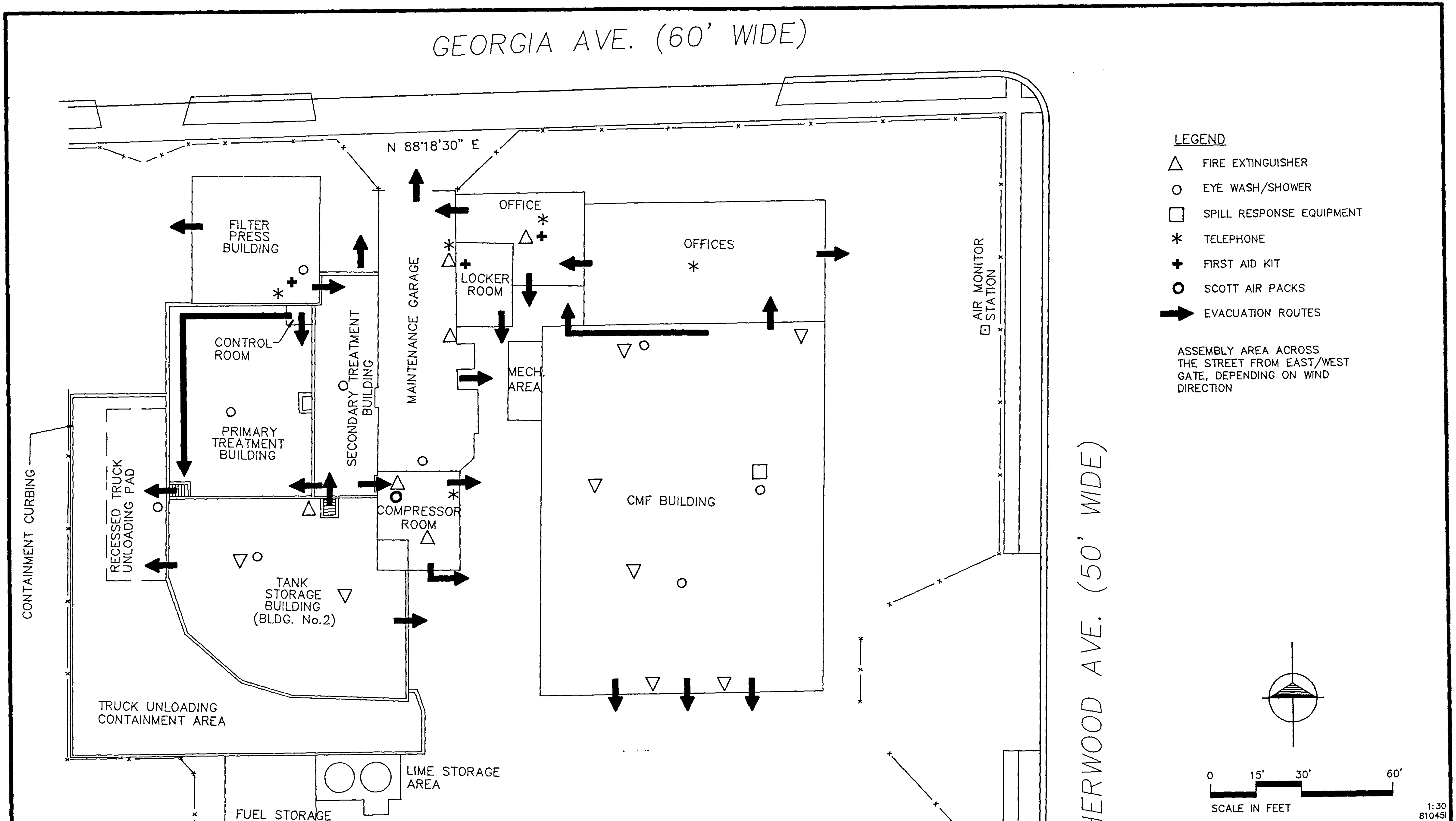


FIGURE G.2

EMERGENCY EVACUATION ROUTES

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SECTION I

CLOSURE PLAN, POST-CLOSURE PLAN, AND RELATED FINANCIAL REQUIREMENTS

This section is submitted in accordance with the requirements of Michigan Act 64, Sections 299.9701 thru 299.9709 which incorporate 40 CFR 270.14(b)(13-18), 264.110 through 120, 264.142, 264.144, 264.178 and 264.197 by reference. This plan identifies all steps necessary to completely close the Dynecol hazardous waste treatment and storage areas at the end of their intended life. A post-closure plan is not required because this is not a disposal facility, and all wastes will be removed at closure.

Dynecol will maintain an on-site copy of the approved closure plan and all revisions of the plan until the certification of closure completeness has been submitted and approved by the MDNR. Dynecol will notify the Director at least 45 days prior to the date partial or final closure is expected to begin. Upon completion of closure, Dynecol will submit to the Director a certification by both Dynecol and an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan as required by 40 CFR 264.115.

I-1 CLOSURE PLAN

I-1a Closure Performance Standard [40 CFR 264 Subpart G]

This closure plan for Dynecol has been designed to ensure that the facility will not require further maintenance and controls; that threats to human health and the environment will be controlled, minimized, or eliminated; and the escape of hazardous wastes, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface water, or atmosphere will be avoided. The provisions of 40 CFR 264 Subpart G are adopted by reference in Michigan's Act 64, Rule 299.9613.

I-1b Partial and Final Closure Activities [40 CFR 264.112(b)(1) and (2)]

No final closure activities are planned at this time. When final closure is initiated, it will follow the procedures outlined in this closure plan which can be implemented at any point during the active life of the facility.

I-1c Maximum Waste Inventory [40 CFR 264.112(b)(3)]

Dynecol, Inc., located at 6520 Georgia Street in Detroit, Michigan, operates a treatment facility for corrosive, metal bearing, TC organic, and some listed wastes, and also a container management facility designed to store containerized wastes until they can be shipped off-site for treatment, recycling, recovery, or disposal, or bulked up and treated on-site. Figure I-1 is a site map of the facility. The facility consists of the following waste management components that might have waste inventory at Closure:

* Three primary treatment vessels (20,000 gallons each) with a concrete secondary containment;

* Four secondary treatment vessels (20,000 gallons each) with a concrete secondary containment;

* One listed waste treatment vessel (20,000 gallons) located within a building having a secondary containment capacity of 102,182 gallons;

* One hazardous waste storage tank (20,000 gallons) with a concrete secondary containment;

* Three filter presses located within a building which has drainage system to a secondary containment area;

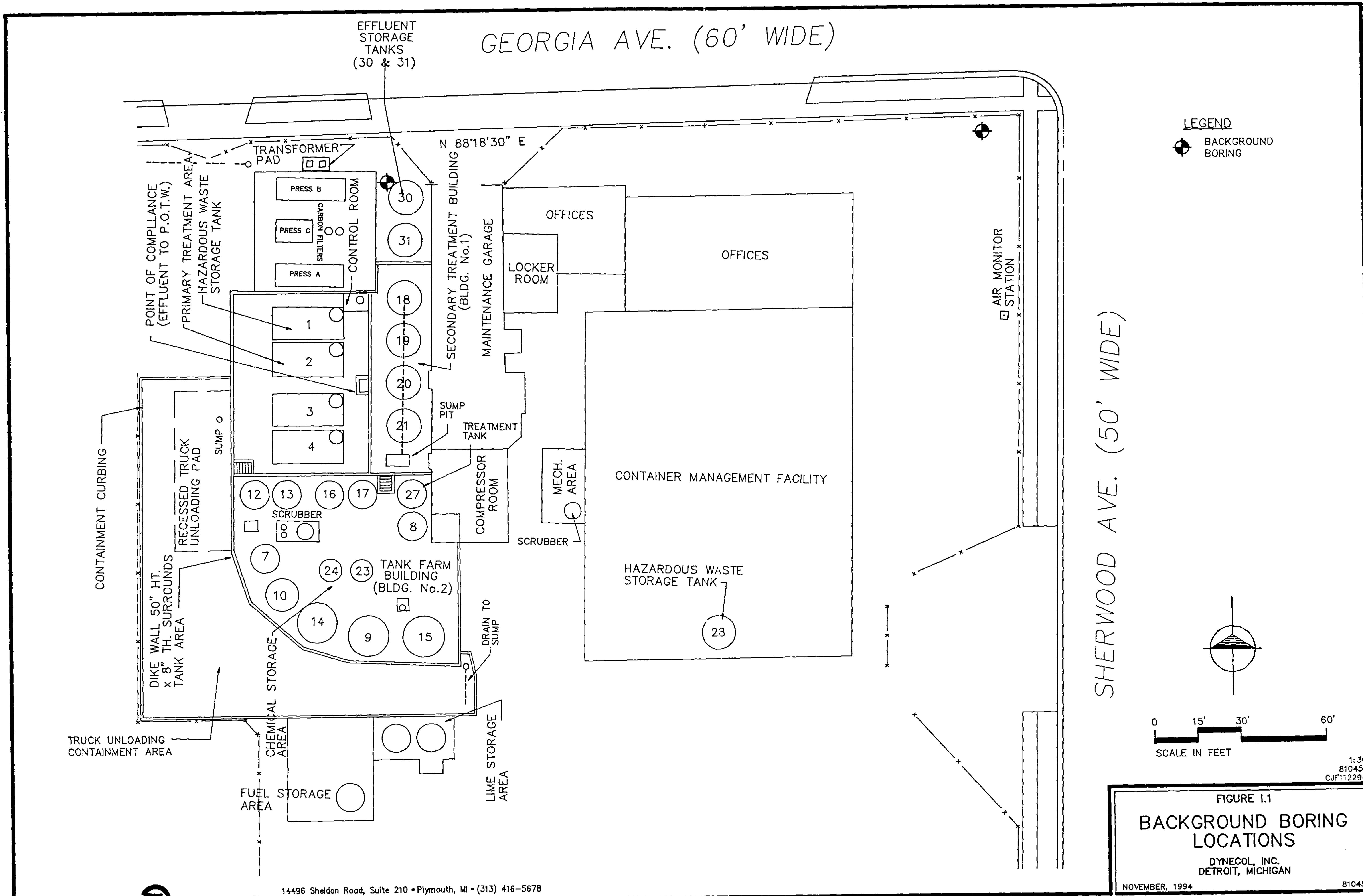

FIGURE 1.1

BACKGROUND BORING LOCATIONS

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structures at the time of closure. The following actions will be taken to ensure clean closure of the hazardous waste treatment and storage tank areas:

* All hazardous waste remaining in the treatment or storage tanks will be pumped through the treatment process for neutralization by plant personnel. Treated waters will be discharged to the Detroit Water and Sewerage system. The sludge remaining in the tanks, estimated to be not more than 60 cubic yards, will be dewatered on site and shipped by a licensed hazardous waste transporter to a licensed hazardous waste facility for disposal.

* All treatment tanks (with the exception of one treatment tank reserved for neutralization during closure), storage tanks, filter presses, related pumps and piping, and all containment structures will be triple-rinsed with either a hot water pressure wash or high pressure wash.

* All rinse water generated during tank and equipment decontamination will be collected and neutralized in the treatment tank reserved for neutralization during closure. Any sludge generated during rinse water neutralization will be dewatered on-site and shipped off-site for proper disposal. After sludge dewatering, the filter presses will be decontaminated and the rinse water will be pumped out and shipped off-site to an approved treatment facility.

* Once the treatment tanks, storage tanks, filter presses, and associated equipment are removed, a limited sampling program will be initiated. Since the hazardous waste tanks and filter presses were contained within concrete containment structures and because there is no exposed soil in the area, the sampling will be limited to the containment areas. Concrete cores and underlying soil samples will be taken at any major low spot in the floor. Additionally, if there are any visible cracks in the concrete containment area, these areas would be cored and sampled.

* Truck transport unloading, including transfers from the container facility for on-site treatment, takes place exclusively within the secondary containment area of the unloading pad. Low spots and any visible cracks in this containment area, as well as in the very limited route between the container loading dock containment area and the treatment unloading containment, would be cored and sampled.

* The concrete will be cored using a six-inch diameter drill according to ASTM-C-42. The concrete will be pulverized and packed into plastic containers. The soil samples will be obtained with a hand auger from a depth of one foot, using the procedures outlined in ASTM D1452-80, "Standard Practice for Soil Investigation and Sampling by Auger Borings." The soil and concrete samples will be analyzed for the parameters listed in Table I.2, based on the types of wastes that were treated and stored in these areas. In accordance with MDNR's October 14, 1987 guidance document entitled "Closure of Tank and Container Storage Areas", the samples will be analyzed first for total metals. If a total metals level is greater than 20 times its TC toxicity level, the metals in question will be analyzed for TC toxicity.

* The hand auger and drilling equipment will be steam cleaned between sample locations to prevent cross-contamination. All rinse water will be collected and placed in drums. A sample of the rinse water will then be analyzed for the parameters listed in Table I.2. The rinse water will be disposed of in accordance with the test results.

* Background samples will be collected from a minimum of four boring locations at unimpacted areas located within the boundaries of the site but beyond the limits of the permitted facility. (Refer to Figure I-1). The lithology beneath the subject site is expected to consist of fill materials overlying native clays. At each boring location, a representative background sample of the: (1) fill materials; and, (2) of the upper first foot of native clays, will be collected for analysis. The number of background samples collected will be consistent with the Michigan Department of Environmental Quality (MDEQ), Environmental Response Division, Waste Management Division, Guidance Document Verification of Soil Remediation(VSR), April 1994, Revision 1. Additionally, sampling will be performed based on the methodologies described in the MDEQ Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases, June 30, 1995.

* No background subsurface organics analytical data for the site is available. However, based upon previous industrial uses of the property and due to the expected existence of pre-existing fill materials beneath the site overlying native clays, it is anticipated that potential organics may be present within the pre-existing fill materials that is not due to the handling of hazardous wastes by the facility. A known potential organic material that is expected to be present in the pre-existing fill materials is coal. Therefore, based on this assumption, collection of background samples from unimpacted areas should be representative of any pre-existing organics present in the fill materials.

* After background levels have been established, based on the VSR, closure sampling will be compared to the background, using the VSR calculations. If the soil samples do not show concentrations which are statistically in excess of background, it will be assumed that no release of hazardous waste has occurred.

* In the unlikely event that contamination is found at any of the sampling locations, excavation will be initiated. A circle with a radius of up to five feet and depth of two feet will be excavated around each contaminated sample point. This will ensure that any potentially contaminated soil below the original sampling depth will also be removed. Because the sample points are located inside a building, excavation may be restricted by the physical limitations imposed by the foundation of the building.

* After the initial excavation is completed, the contaminated sample locations will be resampled to verify that the area is free of contamination. If any of the samples exceeds background, the excavation procedures will be repeated at 0.5 foot intervals until clean closure is documented.

* Excavated soil will be disposed of at a licensed hazardous waste facility or a Type II landfill or placed back into the excavation, depending on the results of the analysis.

TABLE I.2
CONCRETE, SOIL, AND RINSE WATER PARAMETERS

Parameters	Test Method Number*
Sample Preparation Method Toxicity Characteristic Leaching Procedure (TCLP)	1311
pH	9040/9045
Reactive Cyanide/Sulfide	Section 7.3
Arsenic	6010
Barium	6010
Cadmium	6010
Chromium, Total	6010
Chromium, Hexavalent	7198
Copper	6010, 7210, 7211
Lead	6010
Mercury (in liquid waste)	7470
Mercury (in solid/semi solid waste)	7471
Selenium	6010
Silver	6010
Zinc	6010, 7950, 7951

* SW-846, EPA "Test Methods for Evaluating Solid Waste Physical/ Chemical Methods." November 1986, 3rd Edition.
American Society for Testing and Materials (ASTM), 1989

I-1d(ii) Container Storage Area

The container storage area was designed and constructed for the sole purpose of storing hazardous wastes, subsequent to receipt and prior to transfer out in bulk or in original containers. It is designed to contain any spills that may occur without adversely impacting the environment. It contains eight isolation bays which have poured-concrete floors with blind sump in each bay. Each bay also has chemical-resistant coating and the required containment capacity of 10 percent of the maximum total quantity of hazardous waste that can be stored in the bay. The two loading docks are located under a roof and have the necessary containment for spills or leaks. The isolation bays are located within a metal insulated building which is constructed of double panel walls and a built-up roof. With a proper containment for any releases and an established spill response program (section G), it is unlikely that the containment area will be contaminated at the time of closure. Notwithstanding the design and practices noted herein, at the time of closure the container storage area, the loading docks and related containment area, and the container bulking area shall be inspected for cracks and gaps. If any are found, Dynecol shall submit a closure plan amendment that provides for soil sampling beneath the concrete areas possibly affected by such cracks or gaps.

During receipt of waste into the container facility and subsequent shipment of waste from the container facility, either in bulk or container, and either for on-site treatment or off-site transfer, the truck transporting route is essentially the same as treatment transport routing. Such routing passes immediately adjacent to the container loading docks. Hence, closure of such routing areas is addressed in Section I - Id (i).

The following steps will be taken to ensure clean closure of the container area:

* All hazardous wastes in the container storage area will be manifested and shipped to a licensed hazardous waste facility.

* The concrete pad and containment sumps will be triple-rinsed with high pressure water. The rinse water will be collected and placed into drums after each rinse.

* All rinse water will be discharged to the city sewer system if it meets the discharge limits. If the rinse does not meet the restrictions, it will be shipped off-site to an approved treatment facility.

I-1e Schedule for Closure [40 CFR 264.112 (b) (6)]

This facility does not have a definite final closure date, but the date of final closure is estimated to be the year 2014. Figure I.2 outlines the tasks to be done for closure and provides an approximate schedule of final closure activities. Final closure of the treatment tanks, storage tanks, and container storage areas will take place concurrently.

Dynecol will amend this closure plan whenever changes in operating plans or facility design will affect the closure plan. If a permit modification is requested to authorize a change in operating plans or facility design, a modification of this closure plan will be made at the same time. If a permit modification is not needed to authorize a change, a request for closure plan modification will be

FIGURE I.2
SCHEDULE OF FINAL CLOSURE

Days	0	15	30	45	60	75	90	105	120	135	150	165	180
Final volume of waste received	X												
Treatment of the waste			X										
Disposal of sludge				X									
Decontamination of equipment and containment areas					X								
Disposal of rinse waters						X							
Soil Sampling and analyses								X					
Excavation and disposal of contaminated soil												X	
Closure certification													X

made within 60 days after the change in plans or designs takes place.

I-1f Extension for Closure Time [40 CFR 264.113(a) and (b)]

Dynecol does not anticipate requiring an extension for closure time for closure of the hazardous waste process and storage areas.

I-1g Closure Cost Estimate [40 CFR 270.14(b)(15) and 264.142]

Table I.3 outlines the cost of final closure for the treatment and container facilities. Cost estimates are based upon the typical costs, in current dollars, to Dynecol of hiring a third party to close the facility. The estimated cost is based on the following assumptions:

- the treatment and storage tanks contain their maximum capacities;
- the container storage area contains its maximum capacity;
- all rinse water is assumed to be hazardous; and
- all excavated soil is assumed to be hazardous.

Cost estimates are adjusted annually to account for inflation, and the latest closure cost estimate is kept at the facility.

I-2 POST-CLOSURE PLAN [40 CFR 270.14(b)(16)]

Post-closure care will not be needed at this facility since Dynecol is not a disposal facility and all hazardous wastes will be disposed of off-site.

I-3 POST-CLOSURE ESTIMATE [40 CFR 270.14(b)(16) and 264.144]

Dynecol will remove all hazardous wastes from the facility at the time of closure and will submit a clean closure certification report to the Michigan Department of Natural Resources (MDNR). Therefore, no post-closure cost estimate is required.

I-4 CLEAN CLOSURE CERTIFICATION [40 CFR 265.115]

Within 60 days of completing final closure, a clean closure certification will be submitted to the Director of the MDNR by certified mail. This certification will state that the treatment and container facilities were closed in accordance with the specifications in the approved closure plan. This certification will be signed by a responsible corporate officer of the owner/operator [40 CFR 270.11] and by an independent registered professional engineer.

The following documentation will be included with the closure certification:

* Manifests or waste removal summaries for the hazardous waste inventory and rinse water.
* A summary of any procedures that deviated from the approved closure plan.
* Field reports of closure activities including daily time table, weather conditions, and other relevant observations.
* Results of all analytical results used to certify clean closure (lab sheets, chain-of-custody records, QA/AC report, and summary tables).
* Sampling and analysis procedures.
* A map showing locations of samples.
* Statistical evaluations.
* Destinations of wastes removed, where manifests have not been provided.
* Final depths of excavations and elevations and fill material used.
* Any other documentation required to support the certification of the independent registered Professional Engineer.
* A copy of the approved closure plan and letter of closure approval.

Table I.3

FINAL CLOSURE COST ESTIMATE
FOR TREATMENT AND STORAGE AREAS
AND CONTAINER STORAGE AREA

<u>Treatment and Storage Area</u>

1.	Treat 45,000 gallons of raw hazardous waste: (Primary Tank #'s 2-4) @ $0.20/gal	$9,000
	Sludge Disposal and Transport: 60 cu yds @ $24/cu yd	$1,440
2.	Treat 33,000 gallons of neutralized waste from primary treatment process: (Secondary Tank #'s 18-21) @ $0.15/gal	$4,950
	Sludge Disposal and Transport: 35 cu yds @ $24/cu yd	$840
3.	Treat 20,000 gallons of raw hazardous waste: (Storage Tank #1) @ $0.20/gal	$8,000
	Sludge Disposal: 27 cu yds @ $135/cu yd	$3,645
	Sludge Transport: 27 cu yds @ $30/cu yd	$810
4.	Treat 8,250 gallons of raw hazardous waste: (Listed Waste Treatment Tank #27) @ $0.40/gal	$3,300
	Sludge Disposal: 11 yards @ $325/cu yd	$3,575
	Sludge Transport: 11 yards @ $30/cu yd	$330
5.	Disposal: Activated Carbon 2,000 Lb (Treatment Plant) @ $1.50/lb	$3,000
	8,000 Lb (Container Facility) @ $1.50/lb	$12,000
6.	Sludge Disposal & Transport: Filter Press Residue Presses A & B: 14 yards @ $24/cu yd	$336
	Press C : 4 yards @ $355/cu yd	$1,420

7. Container Storage Area: loading, transport, and disposal of 55-gallon drums of hazardous waste (711 drums & 1900 gallons from storage tank into 34 55-gallon drums):

Load	74 hours @ $40/hour	$2,960
Transport	19 loads @ $250/load	$4,750
Disposal	745 drums @ $90/drum	$67,050

<u>Cleaning, Disposal, Sampling Costs</u>

1. Tank cleaning and disposal of rinse waters:

Labor:	80 hours @ $60/hour	$4,800
Disposal of rinse water:	10,000 gallons @ $0.35/gal	$3,500

2. Decontamination of filterpress building floors/walls:

	5,100 sq ft @ $0.65/sq ft	$3,315
Disposal of rinse water:	5,000 gallons @ $0.35/gal	$1,750

3. Concrete coring and soil sampling (20 locations):

Coring:	16 hours @ $40/hour	$640
Soil sampling:	8 hours @ $50/hour	$400
Analytical testing:	20 samples @ $350/sample	$7,000

4. Transport/disposal of contaminated soil:

	20 yds @ $145/ cu yd	$2,900

5. Decontamination of container storage area:

Eight bays:	4,800 sq ft @ $0.65/sq ft	$3,120
Two loading docks:	2,300 sq ft @ $0.65/sq ft	$1,495
Bulking/transfer area:	800 sq ft @ $0.65/sq ft	$520
Disposal of rinse water:	5,000 gal @ $0.35/gal	$1,750

6. Decontamination of the secondary containment system:

	9,200 sq ft @ $0.65/ft	$5,980
Disposal of rinse water:	5,000 gallons @ $0.35/gal	$1,750

7. Decontamination of filter presses:

Labor:	14 hours @ $60/hour	$840
Disposal of rinse water:	1,600 gallons @ $0.35/gal	$560

Certification of Closure

1. Prepare clean closure certification report:

	40 hours @ $65/hour	$2,600

2. Certification by Professional Engineer:

	16 hours @ $95/hour	$1,520

	Total Closure Cost	$176,976

SECTION J

ENVIRONMENTAL ASSESSMENT

This section addresses the environmental assessment requirement of Michigan Act 64, Rule 299.9504(1)(e). The environmental assessment, which includes a failure mode assessment, provides an analysis of the potential major methods by which safe handling of hazardous wastes may fail at Dynecol, Inc.

SECTION J
ENVIRONMENTAL ASSESSMENT
TABLE OF CONTENTS

Tables

Figures

J-1 OBJECTIVE OF FACILITY

Dynecol, Inc. is located at 6520 Georgia Street in Detroit, Michigan, and has been in operation since 1974. Dynecol operates a bulk waste treatment facility and a container management facility.

The objectives of the bulk waste treatment facility are to store and treat characteristically hazardous wastes (corrosivity, TC metal toxicity, and TC organic toxicity), certain characteristic wastes generated from non-specific source (F006/F019), listed wastes (K062, F006, F019), the Other Listed Hazardous Wastes (see Section C), and Michigan hazardous wastes 001D and 003D. These wastes are typically generated by industries such as automotive manufacturing, automotive related product manufacturing, steel production, steel finishing, surface coating, metal working, etc. The treatment processes which are performed include chemical oxidation and/or reduction, chemical neutralization, precipitation, flocculation, detoxification, clarification, sedimentation, fixation, lime stabilization, pressure filtration, and carbon adsorption.

The objectives of the container management facility are to receive, store, and transfer a variety of hazardous wastes in containers of various sizes and in bulk. These wastes are typically received from various sources including industries, schools, hospitals, laboratories, local governments, and other generators. The majority of these wastes are temporarily stored and sent to other facilities for treatment, disposal, recycling, or recovery.

J-2 DESCRIPTION OF THE EXISTING ENVIRONMENT

The Dynecol facility is located at 6520 Georgia Street, Wayne County, Detroit, Michigan (T.1.S., R.12E., E 1/4 of SW 1/4 of Section 21). Figure J.1 shows the general location of the site, and Figure J.2 shows the area immediately surrounding the site.

J-2a Physiography

The site is in a flat area formerly occupied by the glacial Great Lakes. The subsoil consists of lacustrine clay and silt, with small areas of lacustrine sand and clay-rich till (Farrand and Bell, 1984).

J-2a(i) Topography

Figure J.2 illustrates the topography of the area. The elevation of the site is about 630 feet above sea level. There is little relief at or near the site, and there are no steep slopes in the area. The area is totally urbanized, and natural drainage courses no longer exist. There are no lakes or streams in the area, which is in a small coastal drainage basin that drains into the Detroit River. Major roads in the area are I-94 (the Edsel Ford Freeway), which is a half mile to the south, and M53 (Van Dyke), which is half mile to the east.

J-2a(ii) Geology

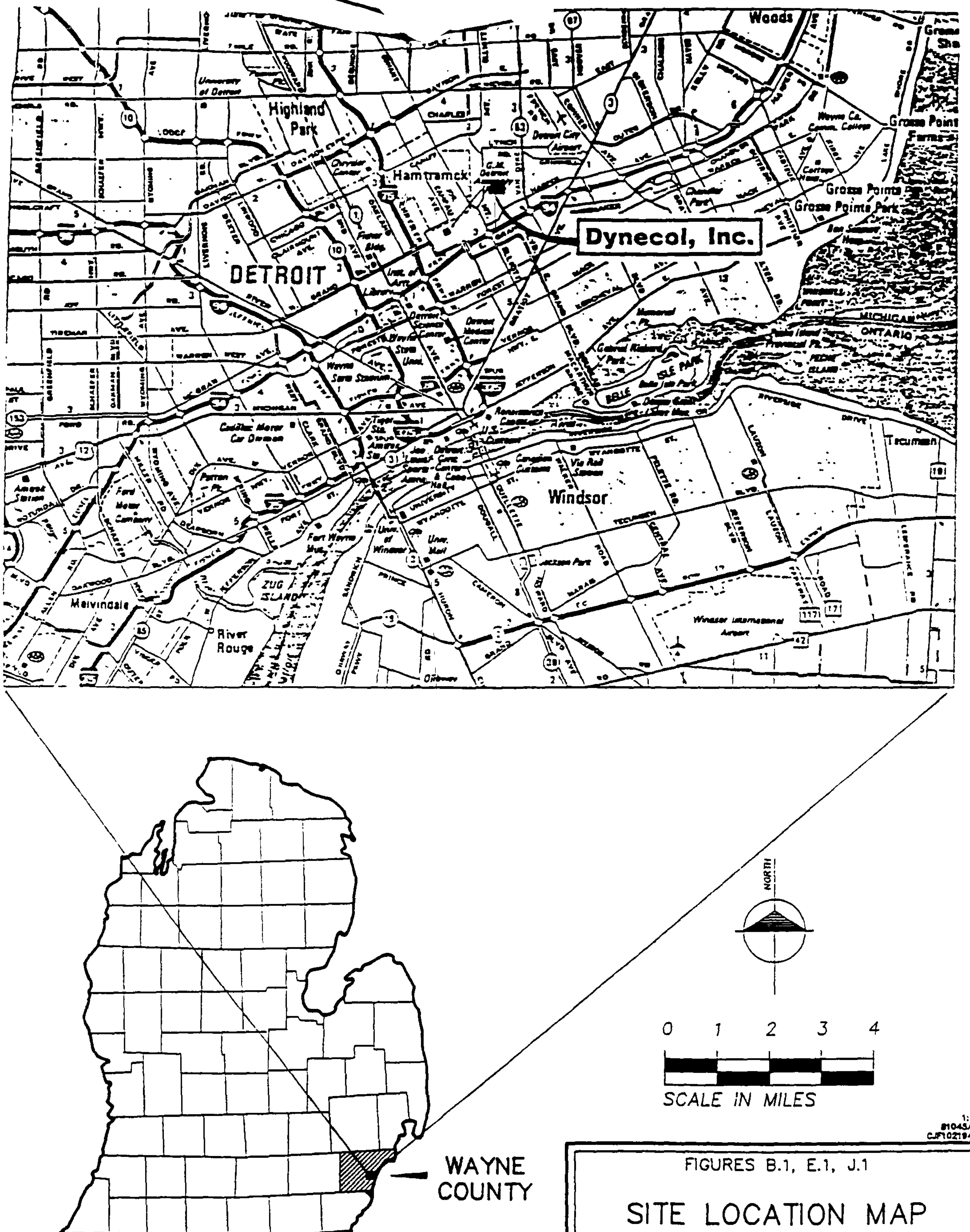
For a more detailed description of the geology of the facility, see Section E (Hydrogeological Information).

<u>Bedrock Geology</u>

The Paleozoic section present beneath northeastern Wayne County consists predominantly of Silurian and Devonian carbonates, evaporitic-carbonates, shales, and occasional sandstones. The bedrock surface beneath the facility is comprised of carbonates and shales of the Devonian Traverse Group. These Paleozoic rocks dip gently toward the center of the basin (to the northwest) at an angle of generally less than one degree. The total thickness of these rocks is approximately 5,000 feet.

<u>Glacial Geology</u>

The glacial drift deposits present in the region range in thickness from 150-200 feet. The term "glacial drift" embraces all types of sediment deposited during the Pleistocene glacial epoch by ice, meltwater streams, glacial lakes, and wind. Dynecol's facility is underlain by predominantly lakebed (lacustrine) clay deposits and possibly some water reworked moraine materials. Mazola (1969)



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FIGURES B.1, E.1, J.1

SITE LOCATION MAP

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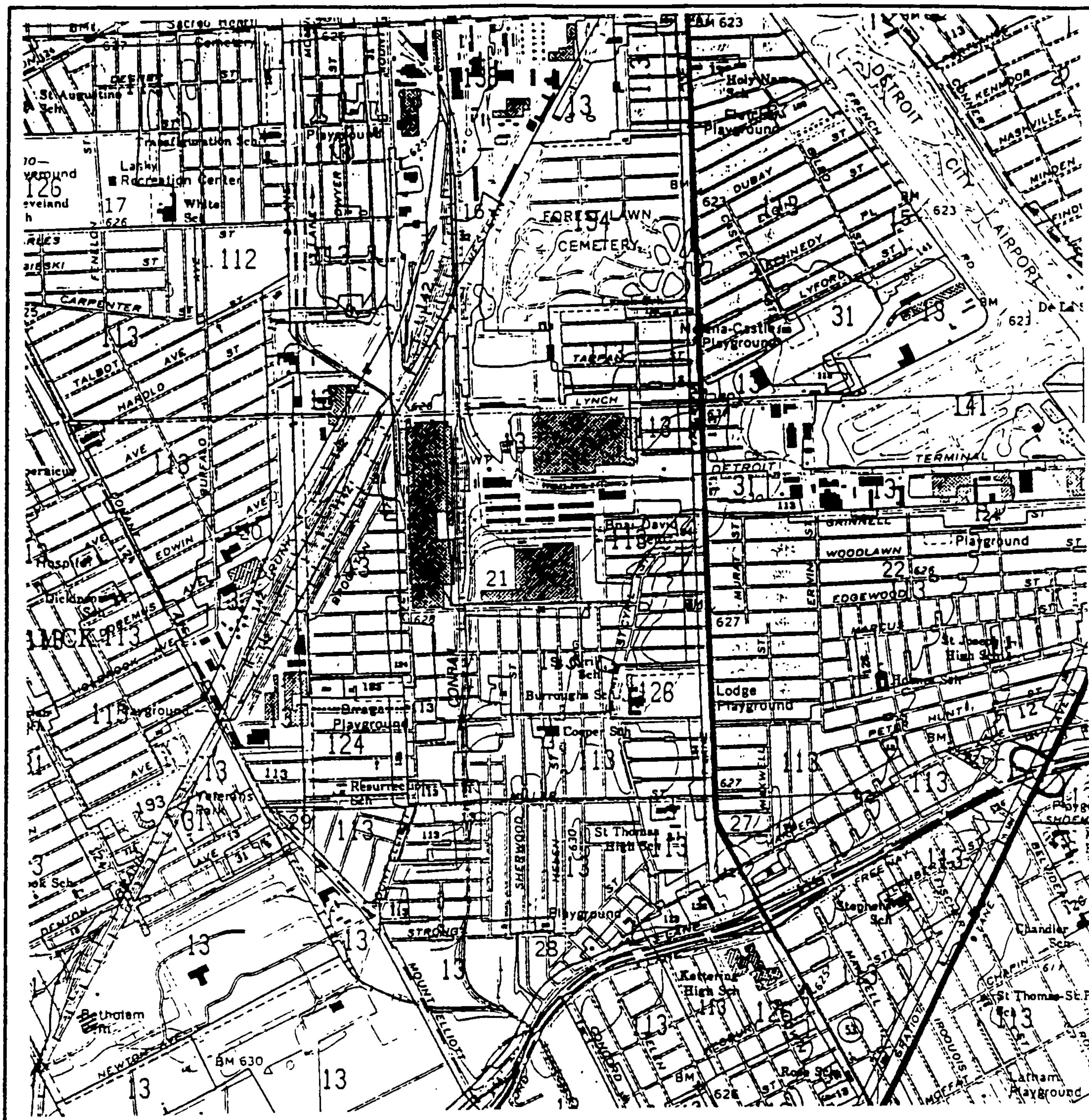

LEGEND

112 MULTI FAMILY, LOW-RISE RESIDENTIAL
113 SINGLE FAMILY, DUPLEX RESIDENTIAL
12 COMMERCIAL
124 SECONDARY NEIGHBORHOOD BUSINESS
126 INSTITUTIONAL
13 INDUSTRIAL
141 AIRPORT
142 RAILROAD
144 ROAD
193 PARK
194 CEMETERY
21 CROPLAND
31 HERBACEOUS
412 CENTRAL HARDWOODS

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FIGURE J.2

AREA AND LAND USE MAP

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shows mostly lacustrine clay for a one-mile radius around the Dynecol facility, with occasional occurences of (in descending order)muck and peat, beach ridge sands, and lacustrine sand. Drilling records from the two nearby bedrock-penetrating wells indicate that nearly the entire thickness of the glacial sediment is comprised of clay. Locations of these wells are shown in Figure E.3 and drilling logs are provided in Appendix E.3.

Dynecol's property overlies glacial deposits that are consistent with regional depositional patterns. The sediments were evaluated using the eleven soil borings and five monitoring wells summarized in Tables E.1 and E.2. Detailed soil boring logs are included in Appendix E.1. Generally, the soil types encountered beneath the Dynecol facility can be divided into the following three units:

1) Mixed fill unit
2) Lacustrine clay unit
3) Lacustrine sand/silt unit

Mixed Fill Unit

The mixed fill unit is a thin veneer of sand, gravel, and clay on Dynecol's property. The composition of the fill material is variable, but locally appears to be comprised of texturally distinct layers. The thickness of this unit varies from 1 to 8 feet.

Lacustrine Clay Unit

The lacustrine clay unit lies immediately beneath the mixed fill unit. The lacustrine clay unit was deposited under near shore, shallow water environments within a glacial lake. Unabraded snail shells were recovered in split-spoon samples of the clay, indicating limited transport of the fossils, which is consistent with the lacustrine clay interpretation. The clay is commonly silty and occasionally contains gravel, suggesting that a portion of the sediment was derived from wave reworked morraine material.

The lacustrine clay unit extends from immediately beneath the fill to more than sixty feet below the surface on Dynecol's property. The clay is virtually homogeneous to a depth of 20 feet (elevation of 610') at which point local, discontinuous intervals of lacustrine sand ans silt are encountered (see Figures E.6, E.7, and E.8).

Lacustrine Sand/Silt Unit

The lacustrine sand/silt unit occurs as isolated stringers of silt and sand within the lacustrine clay unit. The factors controlling the deposition of these relatively coarser grained sediments include a source of sand and silt, the relative energy level of the environment of deposition, and the bathymetric configuration of the glacial lake bed. Textural characteristics of the sediment indicate a unified soil classification (USC) of predominantly ML (silt with low liquid limit) and SM (silty sand) with occasional occurences of SM-SP (silty sand-poorly graded sand). The spatial distribution of the lacustrine sand/silt is subdivided in cross sections A-A', B-B', and C-C' (Figures E.6, E.7, and E.8) into the associated USC soil types. The existing data indicate that none of the intervals of the lacustrine sand/silt unit extend across Dynecol's property.

Mining

Mineral extraction, sand or gravel mining or hydrocarbon extraction have not occured near the Dynecol site to any significant degree. There are extensive salt mines about 10 miles southwest of the Dynecol facility (Great Lakes Basin Commission, 1974).

Earthquakes

Earthquakes are uncommon in Michigan, and no major quakes have occured since the state was settled (Milstein, 1986). Three small earthquakes have been recorded in the Detroit area. The worst of these earthquakes occured in 1938 and measured IV on the Mercalli Intensity scale (Bricker, 1977). This intensity of quake is felt indoors by many people and outdoors by some. Dishes and windows may rattle and cars may rock, but damage is very slight.

The entire State of Michigan is classified as Seismic Risk Zone 1 on the Uniform Code Seismic Risk Map of the United States. Zone 1 indicates that the State has had some record of seismic activity, but special construction measures are usually not required.

J-2(a)(iii) Soils

The soils of this urban area have been greatly disturbed and have not been mapped in detail. The site and nearby areas have soils of the Belleville-Selfridge-Tedrow (loamy substratum) association (Soil Conservation Service, 1977). These are nearly level to gently sloping, very poorly drained to somewhat poorly drained soils that have coarse textured to moderately fine textured subsoil over a coarse textured to moderately fine textured substratum. The site and nearby areas have been drained artificially.

Table J.1
Mean Temperatures and Precipitation
for Detroit, Michigan

Month	Average Temperature (F)	Average Precipitation (inches)
January	25.5	1.93
February	26.9	1.80
March	35.4	2.33
April	48.1	3.08
May	58.4	3.43
June	69.1	3.04
July	73.3	2.99
August	71.9	3.04
September	64.5	2.30
October	54.3	2.52
November	41.1	2.31
December	29.6	2.19
Annual	*49.9*	*30.96*

Source: Michigan Department of Agriculture, 1974.

J-2b Climate

Table J.1 presents annual and monthly mean temperatures and precipitation for Detroit, Michigan. In general, precipitation is fairly well distributed throughout the year. Winds are predominantly from the west to south, and rarely exceed 25 mph (MDNR, 1982) at Detroit City Airport (about 2 miles northeast of the facility). One-hour rainfalls with return periods of 10, 25, and 100 years are 1.7, 2.05, and 2.5 inches, respectively (Hershfield, 1961).

The normal wintertime storm track is south of Detroit, and most passing storms bring periods of snow or rain. In the summer, most storms pass to the north, often bringing brief showers and occasionally heavy thunderstorms or damaging winds (Michigan Department of Agriculture, 1974).

J-2c Terrestrial Systems

Since the Dynecol facility is almost completely paved or covered with buildings, no significant plants grow there. Plants in the area are those typical of older urban residential or industrial areas and include species such as American elm, tree-of-heaven, maples, and ornamental shrubs. Many houses have been removed, leaving vacant lots which support pioneer species characteristic of disturbed areas. None of the trees occur at high density, and most are fairly small in size. No rare, threatened, endangered, or special plant species are known to occur in the area (Michigan Natural Features Inventory, 1988). The climax plant community for the area is beach-maple forest (U.S. Department of Agriculture, 1978).

Wildlife on the facility and nearby is limited to species characteristic of urban areas such as English sparrows, rock doves, starlings, grackles, and fox squirrels. Some cottontail rabbits may live in the area, but predation by local cats and dogs probably limits their numbers. No rare, threatened, endangered, or special wildlife species are known to occur in the area (Michigan Natural Features Inventory, 1988).

J-2d Aquatic Systems

There are no surface water features or wetlands near Dynecol. The area drains to the southeast toward the Detroit River via surface runnoff. The Detroit River is about four miles southeast of Dynecol. Storm drains are combined with the city sewers and flow to Detroit's Wastewater Treatment Plant. Due to the flatness of the facility, most surface flows (excluding all waste management areas) are directed to storm sewers or infiltrate on unpaved portions of the facility.

J-2e Hydrology

J-2e(i) Ground Water Occurence

Ground water in the Paleozoic bedrock generally occurs under artesian conditions. This water is variably mineralized, depending on the presence of hydrocarbons, local mineral composition of the rock, and the hydrodynamic relationship with the overlying glacial drift. Ground water is generally not available in glacial sediments near Dynecol. No regional aquifer system has been defined in this area. A review of public records revealed no domestic ground water supply wells within two miles of Dynecol. The closest municipal well field is in Rochester, Michigan, 22 miles north-northwest of Dynecol. Therefore, no regional or local ground water quality data are available. The following is an analysis of the hydrologic characteristics and water-bearing potential of geologic units beneath Dynecol.

Mixed Fill Unit

Infiltration of precipitation forms a thin saturated to semi-saturated zone within the mixed fill unit. The quantity of water contained within the fill, as well as the ability of that water to flow, is dependent upon the textural nature of the fill. The sand and gravel zones within the fill are more likely to yield water than are the clayey intervals. The typical heterogeneous nature of fill material limits a hydrogeologic interpretation of ground water flow or water quality characteristics.

Three shallow wells are screened within and just below the mixed fill unit on Dynecol's property. Historical water level data from these wells are erratic, suggesting poor hydraulic connection within the mixed fill unit across the facility. A summary of water level data is presented in Table E.3. Water level data for these isolated occurences of ground water cannot be used to calculate flow direction or flow volume.

The shallow ground water in the mixed fill unit is not capable of yielding ground water of sufficient quantity to serve as a source of water supply. No wells in the mixed fill unit are expected in the future due to the extremely low and inconsistent ground water yield of the fill.

Lacustrine Clay Unit

The lacustrine clay unit is typically unsaturated with occasional zones of partial saturation where it is in contact with isolated perched water intervals within the lacustrine sand/silt unit. The unit has a low permeability (1.25 X E-8 to 1.60 X E-8 cm/sec) and is not considered a usable aquifer because it will not yield a significant quantity of water. Recharge of the lacustrine clay unit is limited to very slow infiltration from low-lying zones within the mixed fill unit. The quantity of water entering the clay fill is considered very minimal as the clay serves as an effective barrier to any migration. Generally, the water content of the clay decreases with depth as observed through drilling activities and confirmed with laboratory analyses on samples from borings.

Table J.2

Sites of Environmental Contamination Near the Dynecol Facility

Common Site Name	Location (Township, Range Section)	Point of Release	Pollutants	Resource Affected/ Suspected to Be Affected
Celanese Plastic Specialties	T.1S,R.12E,S.19	underground tank	xylene, toluene, benzene	groundwater
Freezer Services-St. Aubin	T.1S,R.12E,S.29	above ground tank	lead, oil	groundwater soil
General Die Casting	T.1S,R.12E,S.9	above ground tank	chromium lead cyanide	groundwater soil
Mary Ann Kulich Property	T.1S,R.12E,S.17	barrel	oil metals btex	soil
Michigan Industrial Finishes	T.1S,R.12E,S.20	barrel surface discharge	paint wastes	soil
Troy Auto Parts	T.1S,R.12E,S 10	surface discharge	light ind. oil	soil
Harbortown	T.1S,R.12E,S.10	underground tank surface discharge	lead	soil
Mobil McNichols and Gunsten	T 1S,R 12E,S 11	underground tank	pentane btex	soil
Mt Elliott Drum Site	T 1S,R.12E,S.9	barrel	toluene diisocyanate	soil
Peloquin Enterprises-Detroit	T 1S,R.12E,S.9	landfill	lead oil	soil
Reclamation Co	T.1S,R.12E,S.28	above & underground tank	oil, btex,dce tce chloroform	soil groundwater
St Jean 5664 Buried Drums	T.1S,R.12E,S.23	landfill	anthracene flouranthene	soil groundwater
Sunoco E McNichols & Joe Campau	T.1S,R.12E,S.6	underground tank	tph	soil groundwater
Unisys World HQ Detroit	T.1S,R.12E,S.31	surface discharge	cyanide methylene chloride	soil groundwater
Wayne County Detention Center	T 1S,R 12E,S 29	surface discharge	tce, pce, dce	soil groundwater

Source MDNR-April 1994

Lacustrine Sand/Silt Unit

The strata of lacustrine sand and silt within the lacustrine clay appear saturated through visual inspection of split-spoon core samples. Whether the water content is sufficient to overcome capillary forces within the silty soils to provide "free water" is uncertain. The potential for significant recharge to these isolated sands and silts is low due to their containment within the lacustrine clay unit. Therefore, intervals of the lacustrine sand/silt unit are not usable aquifers due to their inability to produce a significant quantity of water.

J-2e(ii) Groundwater Quality

The Dynecol facility is located in an old industrial area, and there are a number of sites where environmental contamination is either known or suspected to have occured. The sites closest to Dynecol are listed in Table J.2. None of these sites are known to have affected the environment in the immediate area of Dynecol.

J-2e(iii) Drainage

Runoff from the Dynecol site enters combined storm and sanitary sewers and under normal flow conditions would go to Detroit's wastewater treatment plant. On-site infiltration of surface flow is observed in the areas of the site that are not paved. Under high flow conditions, runoff from the Dynecol site could enter surface water (the Detroit River) by a combined sewer overflow.

There are several sewer lines near Dynecol. There is a 15-inch "crock" combined sewer that flows to the west along Georgia Street. This line has a manhole in front of Dynecol. This 15-inch line was constructed in about 1926. There is also a deep (15 feet) 5 1/2-foot line of either brick or concrete construction along Georgia Street. This line was built in the 1930's and may leak, but the clay in which this line is located probably minimizes adverse impacts from leakage. The 5-1/2-foot line has several manholes near Dynecol. There is also a small sewer line in the alley behind Dynecol.

J-2e(iv) Surface Water Hydrology

The Detroit River is about four miles southeast of Dynecol and is the only significant surface water feature near the site. The Detroit River drains 228,000 square miles, including all of the upper Great Lakes. The average 1986 (water year) discharge of the Detroit River was 226,500 cubic feet per second (Miller, et al, 1987).

J-2e(v) Surface Water Quality

A recent study performed by the Surface Water Quality Division of the MDNR showed a slow and gradual improvement in water quality in the Detroit River. This improvement is mainly attributed to the volume of water passing through the river and also the reductions in point sources. The analytical results (MDNR report) on certain contaminants in the downstream areas around the Detroit River mouth are as follows:

- Total Phosphorus: from 1983 to 1991, the average annual mean concentration of this parameter is about 0.023 mg/l.
- Suspended Solids: the average annual mean concentration of this parameter from 1982 through 1991 is virtually the same, i.e., 12 mg/l.
- Chloride: the average annual mean concentration of this parameter has not substantially changed since 1979. This value remains about 13 mg/l.
- Total Lead: the average annual mean concentration of this parameter shows a downward trend from 1981 to 1991. This value went from a concentration of about 2.2 mg/l in 1981 to a concentration of about 0.5 mg/l in 1991.
- Total Copper: the average annual mean concentration of this parameter also exhibits a gradual downward trend from a value of about 2.4 mg/l in 1981 to a value of about 1.2 mg/l in 1991.
- Total Zinc: The average annual mean concentration of this parameter shows a steady decrease from a value of about 20 mg/l in 1983 to a value around 5 mg/l in 1991.

J-2e(vi) Great Lakes Water Levels

Water levels in the Great Lakes have been relatively low in recent years. Lake St. Clair is about 6 miles east of Dynecol. The present (December 1994) water level in Lake St. Clair is about 574.87 feet above sea level, down from an historic high level of 576.1 feet in March of 1986 and an average annual level of about 575.42 feet in 1993 (U.S. Army Corps of Engineers' Bulletin of December 1994). The Dynecol facility is far enough inland to isolate itself from the influence of any fluctuations in water levels of the Great Lakes.

J-2f Air Quality

All operations at Dynecol are controlled such that there is an absence of dust, odors, and other inconveniences to the local residents. Most of the traffic areas are paved. The truck parking areas are surfaced with gravel for dust minimization. All treatment processes in the treatment plant and bulking/

drum washing processes in the container facility are vented to appropriate air control systems. All truck traffic is strictly controlled such that only Mt. Elliot Avenue, Georgia Street (west of facility), and Sherwood Street are travelled by trucks. This avoids any truck traffic past the schools and residences which are located east of the facility.

The following discussion of air quality in Wayne County is excerpted from the annual air quality report prepared by the MDNR (MDNR, 1993):

During 1993, the Wayne County Air Pollution Control Division (WCAPCD) operated six PM10 sites (which measure particulate matter of 10 microns or less) in Wayne County. All locations recorded values below the standard. During 1993, the annual arithmetic mean at these PM10 sites ranged from 21 to 42 ug/cubic meter.

Ten stations monitor sulfur dioxide levels in Wayne County. For the past ten years, the sulfur dioxide monitors in Wayne County have met both primary and secondary standards. In 1983, two excursions of the sulfur dioxide primary 24-hour standard were recorded at a site in Detroit. These excursions were running 24-hour averages and therefore are not recorded as a violation of the standard. The other sulfur dioxide sites which operated in Wayne County during 1983 met all applicable standards.

The nitrogen dioxide annual standard was met at the three sites operated in the City of Detroit. No excursions of the nitrogen dioxide standard have been recorded in Wayne County.

As in previous years, WCAPCD operated continuous monitors (at six locations during 1993) for carbon monoxide. Nine years of data indicate compliance with the ambient standards.

Ozone equipment collected data at five locations in Wayne County during 1993. As in the previous year, none of the Wayne County sites recorded values above the 0.12 ppm health-related standard. One Detroit monitor did come within 0.001 ppm of exceeding the standard. In 1992, unseasonably cool summer weather significantly reduced ozone values at sites throughout Michigan. The Allen Park site recorded one excursion of the 0.12 ppm ozone standard in 1991. During 1990, all sites met the standard. One spot located in Detroit reported an exceedance of the ozone standard in 1989.

WCAPCD operated seven calendar-quarter lead sites during 1993. All sites but one (Jeffries Freeway) have complied with the standard since 1980. In 1979 the same highway lead site showed violations

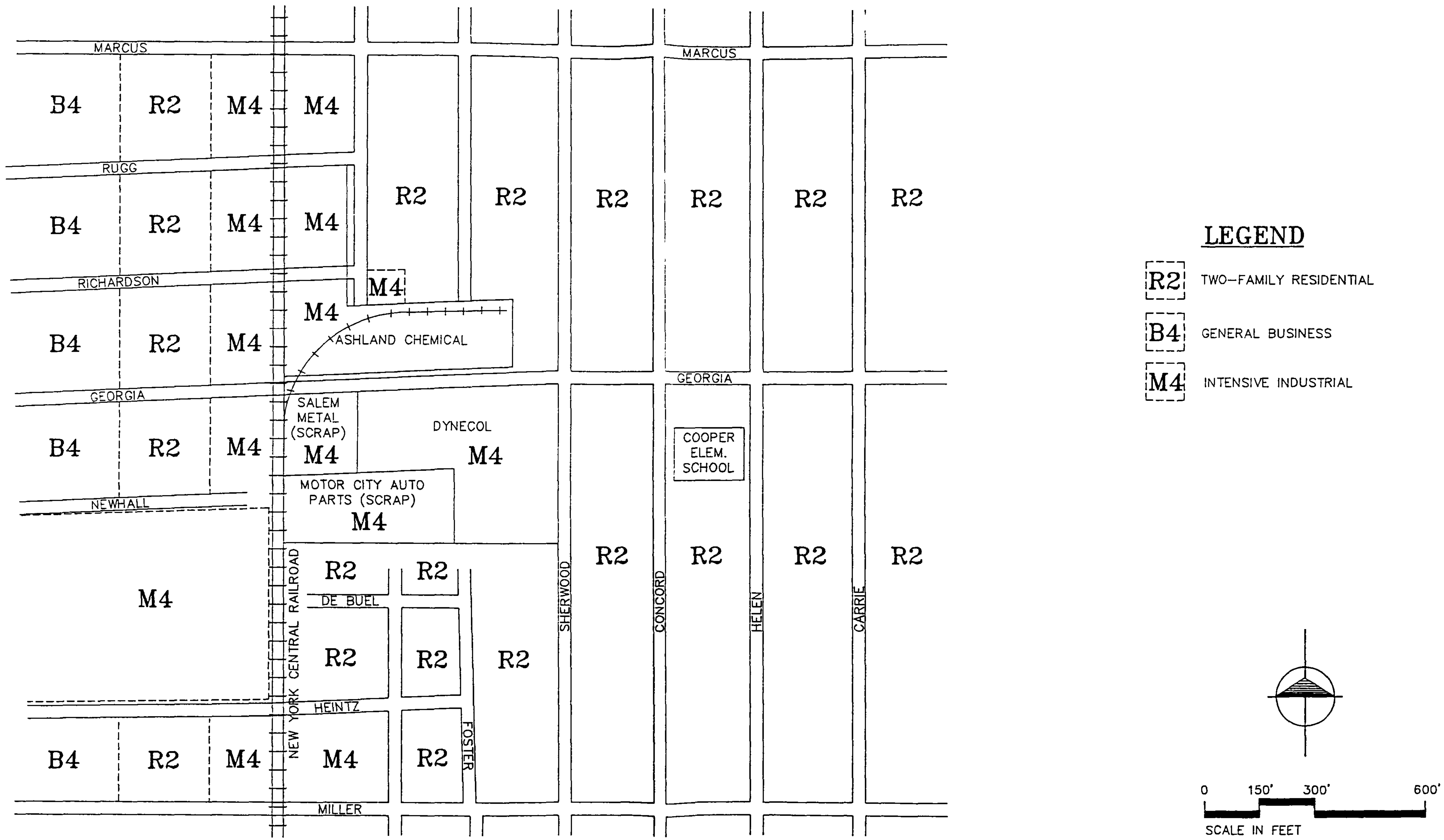

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FIGURE J.3

NEIGHBORHOOD ZONING AND LAND USE

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for two consecutive quarters. The reduction in lead levels over the years is largely attributable to the use of unleaded gasoline in current model automobiles.

J-2g Aesthetics

The Dynecol facility is in a residential and industrial area with no special aesthetic value. There are no panoramic views and no special landscapes except for yards around a few homes. Many homes in the area are abandoned and in poor condition, and most have been removed, leaving vacant lots on the east and south sides of the Dynecol facility. Cooper Elementary School and a few well-maintained homes are the most attractive features in the area. The Dynecol facility itself is kept neat and well maintained. The site is entirely fenced, and is bordered on four sides by either streets, vacant lots, or other industry. Most of the waste management activities at the Dynecol facility are generally performed indoors and not visible from off the site. The Dynecol facility generates relatively low levels of noise. Truck traffic is probably the noisiest aspect of this facility, and this traffic and noise is consistent with other industries nearby. All truck traffic is routed away from any residential areas and the Cooper Elementary School which are located east of the facility.

J-2h Land Use

Figure J.2 illustrates land use near the Dynecol facility, and Figure J.3 details land use in the immediate surrounding area. Land adjacent to the Dynecol site on the west is owned by Salem Metals, Inc., and immediately to the south are vacant lots and part of an auto parts scrap yard. Across Georgia Street to the north of Dynecol is an abandoned site from Ashland Chemicals. Across Sherwood Street east of Dynecol are vacant lots. Other nearby land is used for railroads, roads, highways, schools, and a few neighborhood businesses. Cooper Elementary School is two blocks east of Dynecol and Burroughs School is six blocks east of the facility. There are a few homes located along Georgia Street between Dynecol and Mt. Elliot Avenue (truck route) and widely scattered homes to the immediate south and northeast.

The Dynecol site is zoned for intensive industry (M4 Intensive Industrial District), and the nearby residential areas are zoned for two-family residences (R2 Two-Family Residential District).

J-2i Archaeological and Historical Resources

The State Historic Preservation Officer (SHPO) was contacted regarding the presence of any archaeological or historic resources at or near the Dynecol facility. The opinion of the SHPO is that this facility will affect no historic properties (Eckert, 1988).

J-2j Social Environment

The population of census tract 5108, where Dynecol is located, was 1,028 in 1990 (Bureau of the Census, 1990). This census tract is bounded by Mount Elliot Avenue on the west, Lynch Road on the north, Van Dyke on the east, and Miller on the south.

The population of Wayne County is expected to decline from 2,337,891 in 1980 to 2,069,700 in 2010 (Michigan Department of Management and Budget, 1985). The population of the Detroit Metropolitan area is expected to increase from 4,359,300 in 1985 to 4,588,100 in 2010.

Table J.3
Population Characteristics
Census Tract 5108, Detroit, Michigan

Age	Total Population
< 5	93
5-17	209
18-20	52
21-24	64
25-44	315
45-54	89
55-59	39
60-64	42
65-74	74
> 75	51
TOTAL	1,028

Source: Bureau of Census, 1990

J-2j(i) Economic Levels

The median household income in the tract is $18,742. About 29% of the families are below poverty level. Major occupations are technical, sales, administrative support, clerical services, operators, laborers, fabricators, manufacturing, trade and professional services. Twenty-eight percent of persons 25 years of age or more are high school graduates (Bureau of Census, 1990).

J-2j(ii) Support Systems

Support systems that may be affected by this facility are sewer and water service, police and fire protection, schools, roads, and solid waste disposal.

Detroit Fire Department employs 1,245 fire fighters and the Police Department has about 5,400 employees. Electric, gas, and telephone services are provided by Detroit Edison, Michigan Consolidated Gas, and Ameritech, respectively. Municipal water is provided by the City of Detroit, and Lake Huron is the source of water. The capacity of the water supply system is 1,500 million gallons per day, and maximum water usage is 1,300 million gallons per day. Sewer service is also provided by the City of Detroit with a capacity of 2,100 million gallons per day. The storm and sanitary sewers in the area near Dynecol are combined.

Major highways near Dynecol include I-94 a mile to the south, I-75 two miles to the west, and M-53 a mile to the east. Detroit City Airport is about two miles northeast of Dynecol, and Detroit Metropolitan Airport is about 22 miles west of Dynecol on I-94. Penn-Central Railroad tracks are one block west of Dynecol, but do not serve the facility.

Non-hazardous solid wastes from Dynecol are typically sent to solid waste landfills in Southeast Michigan. The increased recycling, planned landfills, and the incinerator should provide Wayne County with adequate solid waste disposal facilities for at least 20 years.

J-3 ANTICIPATED ENVIRONMENTAL IMPACTS

J-3a Physiography

Existing operations do not affect the drainage, topography, streams, lakes, roads, bedrock, or glacial features of the area.

J-3b Climate

Existing operations, i.e., treatment and container management, do not affect the climate in any way.

J-3c Terrestrial Systems

Existing operations do not have any significant impact on terrestrial systems since the site is not vegetated and has no value as wildlife habitat.

J-3d Aquatic Systems

Existing operations do not have any significant impact on aquatic system. All waste management areas are either covered or have secondary containment in order to eliminate runoff or to prevent runoff from leaving these areas. Secondary containment structures keep any leaked or spilled wastes from leaving the site.

J-3e Hydrology

Existing operations do not have any effect on groundwater hydrology or groundwater quality as designed and routinely operated. All process, storage, loading/unloading areas are well contained and any spills or leakages are confined on-site. A groundwater monitoring program has been implemented at the site to detect the presence of any hazardous waste constituents.

J-3f Air Quality

Existing operations do not have any significant impact on air quality. Air pollution controls are provided in the facility, and an ambient air monitoring program is conducted for the Dynecol facility.

J-3g Aesthetics

Existing operations did not result in any negative impacts on the aesthetics of the neighborhood.

J-3h Land Use

Existing operations at the Dynecol facility do not affect existing land use or the zoning of the site or nearby areas.

J-3i Social Environment

Dynecol's operations may have some positive effects on the social environment of the area. Dynecol may hire new personnel to handle increased volume and variety of wastes, thus helping to improve employment opportunities in the Detroit area.

Existing operations at the facility will not adversely affect fire or police protection or sewer services. The present treatment system does discharge treated wastewater to the city's sewage collection and treatment system. The magnitude of this discharge will not materially change and the capacity of the system is adequate. The increased variety of wastes stored at the facility require coordination with fire protection agencies, but this is not an adverse impact. Section G (Contingency Plan) details coordination with various response agencies.

Truck traffic could be an annoyance to nearby residences and Cooper Elementary School. This adverse impact has been effectively mitigated by routing traffic through an established route only.

J-3j Energy Demand and Non-Renewable Resources

Safe handling of hazardous wastes does require use of fuels for transportation. Other non-renewable resources may be required for disposal (e.g., solidification additives or fuel for incineration), recycling, or recovery at the facilities that will receive wastes from Dynecol. This demand for energy and non-renewable resources is an unavoidable impact of safe handling and disposal of hazardous wastes.

J-3k Solid Wastes

Residuals from the treatment of characteristic wastes, i.e., corrosives, TC metals, TC organics, and 001D and 003D, are managed as non-hazardous solid wastes. These solids can be disposed of in a Subtitle D landfill. This waste stream will neither burden the existing or proposed landfills in the southeast Michigan area, nor it will significantly accelerate the landfills' expected life expectancy or capacity.

J-3l Hazardous Wastes

Residuals from the treatment of certain characteristic wastes generated from non-specific source (F006/F019), listed wastes F006 and F019, and the Other Listed Hazardous Wastes (Refer to Section C) are managed as listed wastes and are generally similar characteristically to the residuals described in Section J-3l. The purpose of the treatment process is to make the waste less hazardous and/or to reduce the quantity of hazardous wastes to be disposed of.

The container management facility, not only provides an economical and efficient waste management service to small generators but also creates a better opportunity to recycle or recover certain wastes, which will reduce the overall loads of hazardous wastes to disposal facilities.

J-3m Summary of Environmental Impacts

Table J.4 summarizes the anticipated environmental impacts. The Dynecol operations do not have significant impacts on physiography, climate, terrestrial systems, aquatic systems, hydrology, aesthetics, air quality, land use and zoning. There may be some minor impacts on solid wastes, energy demand and non- renewable resources. Truck traffic is routed to avoid adverse impacts on residential areas and nearby schools.

Existing operations will have beneficial effects on the local economy, the tax base, and on the waste management service to many generators.

Table J.4

Summary of Anticipated Environmental Impacts

Physiography	No significant impact
Topography	No significant impact
Geology	No significant impact
Soils	No significant impact
Climate	No significant impact
Terrestrial Systems	No significant impact
Flora	No significant impact
Fauna	No significant impact
Aquatic Systems	No significant impact
Hydrology	No significant impact
Air Quality	No significant impact
Aesthetics	No significant impact
Land use	No significant impact
Zoning	No significant impact
Archaeological and Historical Resources	No significant impact
Social Environment	Minor impacts, mitigation possible
Economic Levels	Beneficial impact
Support Services	No significant impact
Energy Demand and Non-Renewable Resources	Small negative impact
Solid Wastes	Small negative impact
Hazardous Wastes	Beneficial impact

The costs of the services provided by Dynecol are paid for by the industries, schools, hospitals, and other generators that use the service. The beneficiary is the public who benefits from improved handling of hazardous wastes.

J-4 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts includes the following:
* increased truck traffic near a residential area;
* use of some non-renewable resources to properly treat and handle hazardous wastes; and
* the generation of some non-hazardous solid wastes from hazardous waste treatment processes.

J-5 MITIGATING MEASURES

The impact of increased traffic near a residential area is mitigated by routing the traffic through the industrial areas between Dynecol and the major transportation networks.

Safe and effective management of hazardous wastes require the use of some energy and non-renewable resources. The use of these items are minimized by reducing the amounts of wastes generated, by recycling and/or recovering some wastes. Reducing the amounts of wastes generated can only be done by the generators. The recycling and recovery of hazardous wastes are facilitated by the comprehensive management of hazardous wastes at Dynecol.

Some wastes resulting from treatment processes are sent to solid waste landfills from Dynecol. Since these wastes would have been sent to hazardous waste landfills, this represents a trade-off and is not an adverse effect.

J-6 FAILURE MODE ASSESSMENT

J-6a Description of System

Dynecol treats corrosives, TC metals, TC organics, characteristic wastes generated from non-specific sources(F006/F019), listed wastes K062, F006, F019, and the Other Listed Wastes (see Section C). The facility also receives, stores, and transfers hazardous wastes in various containers and in bulk. The systems are described in detail in Sections B and D and are summarized below:

The treatment facility currently consists of the following components:

*Unloading area with spill collection and containment structures;

* Three primary treatment vessels (20,000 gallon each) with a concrete containment area providing secondary containment for 100,159 gallons (five times the capacity of the largest tank);
* One 20,000-gallon hazardous waste storage tank located in the same containment area as the three primary treatment vessels;
* One Other Listed Hazardous Waste treatment vessel located within a building having a concrete secondary containment for 102,182 gallons;
* Four secondary treatment vessels (20,000 gallons each) located in a building with secondary containment for 32,948 gallons (more than 150% of the capacity of the largest vessel);
* Three filterpresses located within a building that has a drainage system to a secondary containment area.

The treatment facility is currently designed and licensed to process 144,000 gallons per day of hazardous wastes. The hazardous wastes received for bulk treatment and storage are corrosives, TC metals, TC organics, Michigan waste codes 001D and 003D, certain characteristic wastes generated from non-specific source (F006/F019), listed wastes K062, F006, and F019, and the Other Listed Hazardous Wastes (see Section C). These wastes are delivered to the facility in bulk tankers. Hazardous wastes are stored and processed in above-ground, corrosion resistant vessels. One tank is available for storage of hazardous wastes prior to processing, having a total capacity of 20,000 gallons.

Treatment processes at Dynecol include primary treatment, secondary treatment, and solids dewatering. Primary treatment may be performed in any of the three 20,000-gallon, above-ground vessels by means of chemical oxidation and/or reduction, neutralization, and adsorption. Secondary treatment may be performed in any of four 20,000-gallon above-ground tanks by means of neutralization, chemical precipitation, flocculation, detoxification, clarification, sedimentation, chemical fixation, and lime stabilization. Solids generated from primary and secondary treatment processes are dewatered by means of pressure filtration. Filtrate from dewatering process may be subjected to chemical adsorption, if necessary. Dewatered solids are discharged from the two filter presses directly into sludge transport vehicle situated beneath each press. Treatment of the Other Listed Hazardous Wastes is performed in a 20,000-gallon, above-ground vessel, by means of some/all methods included in the primary and secondary treatment processes, as described earlier. Solids generated from this process are dewatered by a separate filter press, containerized for proper segregation from those resulting in non-hazardous sludge, and disposed of in an appropriate hazardous landfill. Filtrate from the dewatering process may be subjected to chemical adsorption, if necessary.

The container management facility consists of two loading docks, eight isolation bays, a bulking/transfer area, and a drum washing bay. The loading docks have structures to contain any spills or leaks that may occur during loading or unloading. The loading/unloading dock is roofed but does not have side walls.

The storage and bulking areas are in a building heated to 50-60 degrees F in the winter, and cooled by fans in the summer. The container storage area is designed and permitted for a storage capacity of 41,000 gallons (equivalent to 711, 55-gallon drums and a storage tank with capacity of 1,900 gallons) and consists of eight isolation bays. Aisle space is maintained to allow the unobstructed movement of personnel, spill control equipment, and decontamination equipment to any area of the facility in an emergency. The bays have secondary containment of 700 gallons with chemical-resistant coated concrete floors. Each bay has a blind sump to allow any spills or leaks to be collected. Materials that collect in these sumps are pumped into proper container where they are tested and characterized for proper disposal.

Wastes are received at the container facility in containers of various sizes and in bulk. These wastes are either unloaded at the dock or at the rolling door entrance to the south of the facility. The bulking and transfer area and the drum washing bay are equipped with fume hoods and an air emission control system consisting of a blower, a wet scrubber, and two activated carbon units. All wastes are typically stored until they are shipped to an outside treatment, disposal, recovery, or recycling facility, or bulked and treated on-site.

J-6b Definition of Failure

While many precautions have been implemented within the existing system to prevent the release of hazardous wastes to the environment, such as the design of secondary containment structures as well as the training of employees in wastes handling, the potential for system failure does exist as it does for any system. A failure in the system is defined as a release of hazardous wastes or hazardous waste contituents into the environment due to the following:

- leakage or spillage of wastes causing contamination of soil, water, or air;
- incompatible chemical reactions between wastes or wastes and their containers;
- power outages, failure of electrical equipment, or failure of mechanical equipment;
- inadequate storage spaces for wastes;
- inability to identify a facility that will accept wastes to be transferred; and
- acceptance of restricted wastes.

J-6c Possible Causes of Failure

The possible causes of system failure that could result in the release of hazardous wastes or hazardous waste constituents into the environment for each of the failures defined above are summarized below:

- Leakage or spillage of waste could be caused by:

  - leaks from tankers or drums during unloading;
  - damage to drums during unloading;
  - leaks from transfer pumps, piping, or valves;
  - leaks from waste storage tanks or process tanks;
  - leakage from drums in storage; or
  - overfilling of tanks or drums.

  Each of these failures could cause contamination of the soil or water only if the secondary containment system also failed at the same time. Possible causes of failures of the secondary containment system are:

  - physical damage to the secondary containment structures;
  - contact of containment structure with wastes that affect the integrity of the structure;
  - inadequate capacity of the secondary containment to store the volume of wastes leaked or spilled; or
  - a loss of containment volume due to the presence of water,

wastes, soil or other material in the containment area.

A large spill or leak combined with a failure of the secondary containment could result in wastes flowing from the site and into nearby storm sewers, leading to contamination of the sewage and storm water. This combination of events is highly unlikely.

- Incompatible chemical reactions between wastes or wastes and their containers could be caused by:

  - mixing of incompatible wastes in a tank or drum;
  - mixing of incompatible wastes that have leaked or spilled;
  - addition of a waste to a container with a residue of an incompatible waste; or
  - addition of a waste to a container that is incompatible with the waste.

- Power outages, failure of electrical equipment, or failure of mechanical equipment could be caused by:

  - damage to this equipment;
  - inadequate maintenance;
  - power failure outside of Dynecol facility;
  - defective equipment supplied by the manufacturer; or
  - improper use or installation of equipment.

- Inadequate storage space for wastes could be caused by:

  - failure to transfer or treat wastes on schedule; or
  - acceptance of wastes for which adequate proper storage is not available.

- Inability to identify a facility that will accept wastes to be transferred could be caused by:

  - acceptance of a waste before a facility that will accept it has been identified;
  - rendering a waste unacceptable through mixing, treatment, improper containment, inadequate documentation, or inadequate testing; or
  - a facility which formely agreed to accept a waste subsequently refusing to accept it.

- Acceptance of a restricted waste could be caused by:

  - inadequate waste evaluation;
  - inadequate screening and fingerprint analysis; or
  - incorrect identification of a waste by a generator.

J-6d Detection of Failure

Failures of treatment, storage, and management systems will readily be detected by careful observations of operations, inspection and testing of equipment, waste handling procedures, communication with disposal facilities for wastes being transferred, and screening of shipments.

J-6d(i) Leaks and Spills

This failure mode will be obvious if it occurs and will be immediately detected by facility personnel. Incoming tank trucks are unloaded by trained personnel and will be constinuously observed by facility personnel. Any leaks or spills from the tanker or hose connecting to the receiving tank will be immediately evident.

All waste storage areas, containment systems, loading and unloading areas, tanks and piping systems undergo regular and routine inspections by plant personnel. This inspection includes observation of container conditions, any structural deterioration, drum spacing and labeling, waste quantities, equipment operation, containment system integrity, and any potential problems that may lead to system failure. Facility personnel are also instructed to check for any leaks or spills of stored materials and to immediately initiate appropriate response procedures when such releases have been detected. All inspections are guided by an inspection schedule and are recorded on inspection logs. All tanks, pipings, pumps, and other ancillary equipment are located above ground and in secondary containment areas. Tanks are provided with high level alarms that indicate when the tank is near capacity. There is no underground equipment that cannot be inspected or observed.

Groundwater monitoring wells are in place to detect any abnormal conditions within the perched water at the site. These wells are sampled and analyzed quarterly.

J-6d(ii) Incompatible Reactions

The possibility of mixing incompatible wastes is minimized by the use of procedures for identifying and accepting wastes (see Sections C and D). Any incompatible reactions will be promptly detected by trained facility personnel who will take proper actions in accordance with Dynecol's contingeny plan (Section G). Regular inspections will detect any leaks or spills.

J-6d(iii) Power Outages and Equipment Failure

Power outages at the plant will be detected immediately since all equipment and lights operate on electricity. All valves in the treatment system with automatic actuators are designed with spring closure in the event of loss of power. In this way, the transfer, overfilling, or release of untreated or partially treated waste will be stopped with loss of power. Failure of mechanical or electrical equipment will also be detected immediately if the equipment stops working completely, delivers reduced supply or pressure of fluid, or emits false or no signals in the case of controls and meters. Regular inspection and testing of critical equipment will detect potential equipment failure.

J-6d(iv) Inadequate Storage

Inadequate storage will be detected by regular inspections and inventory of wastes.

J-6d(v) Inability to Transfer Wastes

Inability to transfer wastes will be detected by refusal of other facilities to accept wastes.

J-6d(vi) Potential Acceptance of Restricted Wastes

Acceptance of restricted wastes will be detected and prevented by proper waste evaluation and shipment screening as described in the Waste Analysis Plan (Section C-2).

J-6e Environmental Effects of Failure

J-6e(i) Treatment Facility

The potential effects that the various types of failure of the bulk treatment system would have on the air, surface water, ground water, and the health of both the employees and the general public are described below. Many of these potential effects presuppose a "worst case" scenario where the system experiences complete failure and large quantities of hazardous wastes will be involved. Under the most probable failure situation, any potential releases of waste would be confined on the site, easily managed, and would result in minimal effects to the environment.

J-6e(i)(a) Air

The environmental effects of a failure on air quality would depend on the type of failure, the magnitude of the failure, and the type of material lost to the environment in the failure. The waste materials processed at this facility are typically aqueous solutions of inorganic chemicals which have relatively low volatility and low vapor pressure in solution. Solutions containing hydrochloric acid may adversely affect local air quality during the following worst-case scenario. A massive spill of 8,000 to 10,000 gallons (the maximum capacity of a tanker and of waste material contained in a primary treatment vessel) of untreated 5% HCl solution at its maximum temperature of 104 degrees F could result in a concentration of HCl exceeding the ceiling limit value of 5.0 ppm in a thin layer of air, less than 1 cm thick, immediately above the liquid surface of the spilled material. Calculations based on the solution concentration, solution temperature, and vapor pressure at these conditions show that the concentration of HCl in the air in equilibrium with the liquid surface would be 5.7 ppm of HCl. Because tankers are unloaded outdoors, HCl vapors being released from a massive spill as described above would be quickly diluted and dispersed in the atmosphere, resulting in an HCl concentration in air, even a short distance from the liquid surface of less than the ceiling level.

Dynecol also accepts the Other Listed Wastes (See Section C). These wastes are listed wastes (included wastes generated as a result of the mixture and derived from rule) which contain less than 1% by weight of Total Organic Carbon (TOC) and are otherwise characteristically similar to the wastes as described in Sections C-1c(i) and C-1c(iii). Because tankers are unloaded outdoors and since the concentration of TOC is typical of a wastewater, i.e., less than 1%, vapors being released from a massive spill of these wastes would be quickly diluted and dispersed in the atmosphere, with little or no impact on air quality at the immediate area of the spill nor certainly beyond the boundaries of the facility.

The scenario described in the first paragraph applies to the untreated, dilute HCl solutions received at this facility. Once the treatment process has begun thru the addition of an alkaline reagent to the solution, the free acid content rapidly decreases until a pH level of approximately 7.0 is reached, at which point no free acid remains in solution. For this reason, the release of acid fumes is not possible from either the secondary treatment vessels, the filterpresses, or the dewatered solids storage. A similar evaluation of both sulfuric acid and nitric acid at their maximum concentration and temperature indicates that the limitations on their vapor concentration in air would not be exceeded in the event of this worst-case scenario.

A massive spill of any liquid material could produce a spray of the material spilled which would be generated only when the material contacted the concrete unloading pad or the concrete floor of the secondary containment area, and would last for only a short time. In either instance, there would be little or no impact on air quality beyond the immediate area of the spill or beyond the property line boundaries of the facility. The potential for the mixture of incompatible wastes which could result in the generation of toxic vapors is minimized by the procedures for identifying and accepting wastes for treatment at the facility.

Power outages or electrical equipment failure are not expected to pose an adverse impact upon air quality because the entire plant would automatically shut down and revert to a failsafe mode.

J-6e(i)(b) Surface Water

The environmental effects of any failures on surface water quality would depend upon the type of material lost during the failure, its quantity and whether or not the lost material escaped from the facility through storm sewers which are directed to the wastewater treatment plant. Spills or leaks would normally have no adverse effects on surface water quality because secondary containment is provided for all tanks, for the unloading area, and for the treatment areas. In addition, there are no surface water features or wetlands near Dynecol. No loaded tank trailers are parked or left waiting outside of the facility boundaries when they arrive for unloading. Power outages, mechanical or electrical failures are not expected to pose an adverse impact upon surface water quality because the plant would automatically shut down and revert to a failsafe mode.

J-6e(i)(c) Ground Water

The environmental effects of spills or leakage of materials handled at this facility on ground water quality would be negligible and limited to this site. There is no usable aquifer at this site, and beneath the isolated pockets of perched water is a sandy clay layer extending from a depth of 21 to 36 feet below the surface. All active areas of the facility (entrance and exit roads, unloading, storage, and process areas) are paved with concrete, 12 inches or more in thickness. In addition, curbs or spill containment structures are provided to prevent runoff from flowing to unpaved area outside of the plant, and all wells are securely capped to prevent entrance to perched water pockets in the surficial fill underneath the facility. These pockets of perched water are sampled and the water in analyzed quarterly. Any deviations from the normal range of ground water quality would be detected at this time.

Power outages and mechanical or electrical equipment failure will have no impact on ground water quality because the plant will automatically shut down and revert to a failsafe mode.

J-6e(i)(d) Employee and Public Health

The effects of any failures on employee and public health will depend on the type of material lost during failure, the concentration of the material, the type of tissue contacted, and the duration of human contact. Losses of dilute acidic or alkaline solutions or more concentrated neutralization reagents could pose a threat to employee or public health upon direct contact. Leakage or spillage of corrosive materials, either acidic or alkaline, could cause acute symptoms ranging from tissue irritation to chemical burns on exposed skin or tissue. Inhalation of acidic fumes or vapors could result in inflammation of the nose, throat, or larynx.

Contact with sprays, which may be produced in the event of a massive spill, could cause those employees in the immediate vicinity of the spilled material to be exposed by both tissue contact and inhalation of small quantities of the material. There is no reason to believe that public health would be affected beyond the boundaries of this facility.

Power outages, mechanical or electrical equipment failure are not expected to cause adverse effects to employee or public health because the plant will automatically shut down and revert to a failsafe mode.

J-6e(ii) Container Management Facility

J-6e(ii)(a) Air

A failure mode for the container storage area that could affect air is the failure of one or more drums that could release vapors to the air. This failure could result from corrosion of the container, a puncture to the container, a spill of a container's content, or not covering the container completely or properly during storage. The mixture of incompatible wastes could produce toxic vapors. The effects of such a failure on air would depend on the waste, the rate of release, and the amount released. Such releases could cause concentrations of some wastes to exceed recommended concentrations in air within a small, localized area of the container management facility. The general public is not expected to be affected by such releases.

J-6e(ii)(b) Surface Water

There are no known surface water features or wetlands near the Dynecol facility. In addition, the eight storage bays and the permitted storage tank (#28) in the container management facility are provided with secondary containment for any spills or leakages that may result from container/tank ruptures.

J-6e(ii)(c) Ground Water

There are no usable aquifers or domestic ground water supply wells near or under the Dynecol facility. Secondary containment structures are provided for the container management facility for any spills or leakages that may result from container/tank ruptures.

J-6e(ii)(d) Employee and Public Health

Exposure to many of the wastes stored at the Dynecol facility could have a variety of effects on human health. The effects would depend on the waste, on the exposure duration and mode, and the concentration of the waste. Employees at the Dynecol facility are the most likely population that could be exposed to the wastes.

The variety of wastes that are stored at the facility would result in different reactions depending on the chemicals involved and the exposure route, such as eye or skin contact, inhalation, and duration of exposure. It is anticipated that any exposures would be of short duration. The potential effects are not expected to be long term in nature. Consequently, the prediction of exposure reactions can be summarized as follows:

- for corrosive wastes, inhalation could result in respiratory irritation or damage and skin or eye contact could result in burning and possible tissue damage;
- for metal or carbide wastes, inhalation could result in respiratory irritation and skin or eye contact could result in burning or irritation; and
- for halogenated solvent wastes and solvent-based coatings and resins, inhalation could result in headache, dizziness, nausea, or unconsciousness and skin or eye contact could result in dry and cracked skin, rash, redness, itching, or burning.

All containerized wastes will be handled in a cautious manner by personnel who are trained to prevent exposure as well as to respond to exposure to these wastes.

[illegible] Corrective Actions in the Event of Failure

Possible corrective actions in the event of a failure are detailed in Section G, the Contingency Plan, and are summarized below. This plan describes the following procedures that will be followed in the event of an emergency situation such as fire, explosion, severe weather, or any unplanned sudden or non-sudden release of hazardous materials to the air, soil, or surface water at the facility:

- The discoverer of an emergency situation contacts the Emergency Coordinator. A determination is made whether the situation is an imminent or actual emergency. All facility personnel and appropriate federal, state, and local agencies (including police and fire departments) will also be notified.

- The character, source, amount, and extent of released materials will be identified. Any potential hazards to human health or the environment associated with this release will be assessed and evacuation will be initiated if necessary. Any materials that may be reactive with the released material will be removed from the area.

- For a fire and/or explosion, efforts will be made to prevent the fire from spreading to nearby areas. All feed lines will be shut down and possible sources of ignition will be eliminated. Spills of flammable materials will be contained through the use of chemical absorbants. Flushing the area with large quantities of water or foaming of the spill will be performed if indicated.

- In the event of a leak or spill in the treatment system, all waste feed lines will be shut down and the leak or spill stopped. Spilled materials within the containment system will be removed by either a contractor or trained facility personnel for proper disposal. Small spills or leaks will be flushed to the sump, and a pump will be used to retrieve the diluted waste materials. Absorbent materials may also be used. Spills or leaks that are not contained will be isolated, appropriately recovered, and disposed of. If soils are involved, excavation of affected soils may be necessary.

- If the spill or leak results in the formation of a toxic vapor cloud, an assessment will be made of what areas may be impacted and may be evacuated.

- Actions potentially may be undertaken to prevent the recurrence of fire, explosion, or releases, including the stopping of processes and operations, the collection and containment of released materials, and the recovery or isolation of containers. Valves, pipes, and other equipment will be monitored prior to start-up for leaks, pressure build-up, gas generation, or ruptures.

- Arrangements will be made for the treatment, storage, or disposal of recovered or contaminated materials. These materials will be properly stored at Dynecol until they can be removed.

All of these actions will be undertaken to correct any hazard that may result from the release of hazardous wastes or hazardous waste constituents.

J-6g Actions Taken to Minimize the Possibility of Failure and Adverse Impacts of Failure.

The procedures, structures, and equipment used at the facility to minimize failure and adverse impacts of failure are identified in the Prevention Plan (Section F) and the Contingency Plan (Section G). The following is a summary of these items. Table J.5 identifies corrective and preventative actions for each potential cause of failure identified in Section J-6c of this Failure Mode Assessment.

All waste treatment, waste storage, and unloading areas are provided with secondary containment. The secondary containment for the drum storage areas consists of concrete with a chemical-resistant coating that maintains its integrity if it should be exposed to the wastes stored in the bay. Neutralizing and absorbing materials are available to provide for additional containment. The secondary treatment, other listed hazardous waste treatment, tank storage, container storage, and container loading dock areas are all under roofs to prevent precipitation or runoff from entering those areas. The primary treatment area and the truck unloading pad are provided with blind sumps for proper removal of any precipitation or runoff.

Containerized hazardous wastes are kept indoors in a heated and ventilated building. This eliminates exposure of the containers to harsh weather and prevents either the freezing or over-heating of the contents of the containers, either of which could cause the containers to leak or rupture.

The training of personnel is essential to prevent the mixing of incompatible wastes. Dynecol's training program and the procedures for determination of waste compatibility are described in Sections H (Personnel Training) and C (Waste Characteristics), respectively.

Equipment failure can be partially prevented by regular inspection, testing, and maintenance of critical equipment. In the event of

Table J.5

Corrective and Preventative Actions

Failure	Corrective and Preventative Actions
(i) Leaks and Spills	
(a) Leaks from tanks or drums during unloading	Secondary containment, cleanup, temperature control
(b) Damage to drums during unloading	Secondary containment, cleanup
(c) Leaks from pumps, pipes, valves	Secondary containment, cleanup
(d) Leaks from tanks and process equipment	Secondary containment, cleanup
(e) Leaks from stored drums	Secondary containment, cleanup
(f) Overfilling	Secondary containment, alarm system
(g) Failure of secondary containment	Inspection, maintenance, extra capacity, waste-compatible materials
(ii) Incompatible Reactions	
(a) Mixing incompatible wastes in tanks or drums	Training, testing
(b) Mixing of Leaks and Spills	Immediate cleanup, segregation of wastes
(c) Mixing with incompatible residues	Training
(d) Adding waste to incompatible container	Training, warning signs
(iii) Power Outages and Equipment Failure	
(a) Damage to equipment	Repair and replacement
(b) Inadequate maintenance	Regular maintenance, inspection, testing
(c) Power failure	Failsafe mode
(d) Defective equipment	Inspection, testing
(e) Improper use or installation	Inspection, testing
(iv) Inadequate Storage	
(a) Failure to transfer or treat wastes	Inspection
(b) Acceptance of wastes when storage is not available	Inspection, inventory
(v) Inability to Transfer Wastes	
(a) Acceptance of waste before disposal facility is identified	Prior arrangements required
(b) rendering a waste unacceptable	Prior arrangements required
(c) Change at disposal facility	Prior arrangements required, disposal options
(vi) Acceptance of Restricted Wastes	
(a) Inadequate evaluation	Waste analysis and screening
(b) Inadequate screening	Waste analysis and screening
(c) Misrepresentation by generator	Waste analysis and screening

a power failure, the plant reverts to a failsafe mode. Spare parts for pumps, valves, pipes, hoses, and other replacement equipment are maintained at the facility. Local suppliers provide many items used at the facility and usually failed equipment can be repaired or replaced in 24 hours by either facility personnel or outside vendors.

Inadequate storage for wastes will be detected by inspections and inventory, and no further wastes will be accepted if storage for these wastes is not available. Inability to transfer wastes will be avoided by making appropriate arrangements with the outside disposal facilities before wastes are accepted at the facility. Wastes will not be mixed or otherwise changed until a disposal facility has agreed to accept the waste. Dynecol also makes arrangements with a variety of waste disposal, reclamation, or recycling facilities so that there are a number of options available for transferal. Acceptance of restricted wastes will be prevented by waste analysis and screening as described in the Waste Analysis Plan (Section C-2).

Water supply, provided by the City of Detroit pipelines, is protected from contamination by breaker valves and backflow prevention valves, as required by city code.

All personnel with waste management responsibilities receive training so that they are familiar with the provisions of Dynecol's Contingency Plan, the hazardous nature and properties of chemicals and chemical wastes, the environmental regulations, the proper and safe handling and storage procedures for wastes, the facility equipment and treatment processes, the emergency response procedures, and proper use and location of all emergency equipment and structures available on-site. They are also provided with personal protective equipment such as safety glasses, hard hats, gloves, boots, respirators, etc., in order to prevent or minimize their exposure to hazardous materials.

SECTION K

SOLID WASTE MANAGEMENT UNIT INFORMATION

As required by the Hazardous and Solid Waste Amendments of 1984 (HSWA), Section 3004(a), this section contains a certification regarding potential releases from solid waste management units at the Dynecol facility.

CERTIFICATION REGARDING POTENTIAL RELEASES FROM
SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: DYNECOL, INC.
EPA I.D. NUMBER: MID 074 259 565
LOCATION CITY: DETROIT
STATE: MICHIGAN

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTE UNITS CURRENTLY SHOWN IN YOUR PART B APPLICATION

	YES	NO
* Landfill		X
* Surface Impoundment		X
* Land Farm		X
* Waste Pile		X
* Incinerator		X
* Storage Tank (Above Ground)		X
* Storage Tank (Underground)		X
* Container Storage Area		X
* Injection Wells		X
* Wastewater Treatment Units		X
* Transfer Stations		X
* Waste Recycling Operations		X
* Waste Treatment, Detoxification		X
* Other ______		X

2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated, or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, and a site plan if available.

N/A

NOTE: Hazardous wastes are those indentified in 40 CFR 261. Hazardous constituents are those listed in Appendix VIII of 40 CFR 261.

3. For the units noted in Number 1 above and also those hazardous waste units in your Part B application, please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occured in the past or still be occuring.

   Please provide the following information

   a. Date of release
   b. Type of waste released
   c. Quantity or volume of waste released
   d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

   a. Date of release: July 6, 1991.
   b. Type of waste released: NO2
   c. Estimated quantity released: Maximum of 2,925 pounds.
   d. Nature of release: caused by iron reduction of a trace amount (1-4%) of nitric acid contained in 33% sulfuric acid stored at the facility. Emission thru 66 foot scrubber stack.

4. In regard to the prior releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

   No known soil or groundwater contamination.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (42 U.S.C 6902 et seq. and 40 CFR 270.11(d))

Frank Biermann, President
Typed Name and Title

Frank Biermann
Signature

1/3/95
Date

SECTION L

ENVIRONMENTAL MONITORING PROGRAMS

This section summarizes the environmental monitoring programs that will be implemented in accordance with the requirements of 40 CFR Subpart F and Michigan Act 64, Rules 299.9611 and 299.9504(1)(f).

L-1 GROUND WATER MONITORING

L-1a Purpose

The purpose of the ground water monitoring program is to provide analytical surveillance of ground water underlying the site and evaluate whether hazardous wastes or hazardous waste constituents from the regulated units have entered the ground water under the waste management facility. This program will employ a statistical comparison of measured concentrations of each of the primary monitoring parameters (hazardous constituents) with background values established for each well. Additionally, this monitoring program will continue the building of data base on the composition of the ground water under the Dynecol facility which can be used to evaluate any future changes in the ground water chemistry.

L-1b Waste Description

The waste types received at the treatment plant are classified as hazardous due to their corrosivity, TC metals content, and TC organics content. This facility also receives listed wastes K062, K157, F006, and F019. In addition, the Other Listed Wastes (as described in Section C) are also accepted for treatment. All treatment is performed in above-ground vessels with complete secondary containment. Waste treatment processes typically include primary treatment, secondary treatment, and dewatering (refer to Section D for detailed information).

The container management facility receives a variety of wastes in containers of various sizes and in bulk. Detailed description of all waste codes managed at the container facility is provided in Section C. As discussed in Section L-1d below, ground water monitoring for the container management facility is not required under Act 64 Rule 299.9611(3)(a).

L-1c Monitoring Well Information

Due to the sporadic occurence of saturated sediments beneath the Dynecol facility, primarily during periods of increased precipitation or snow melt, limited ground water monitoring alternatives exist. Results of hydrogeological investigations reveal no usable aquifer within the upper sixty (60 feet) of sediment beneath Dynecol facility (Section E). The uppermost water-bearing sediments (perched water) beneath the facility occur within the mixed fill unit (a thin veneer of sand, gravel, and clay covering the site). Although this interval is limited horizontally and vertically and is an inconsistent source of perched ground water, the mixed fill unit is the only zone in which ground water monitoring wells can be installed.

L-1c(i) Monitoring Well Locations

The groundwater monitoring system at Dynecol, Inc. is comprised of two wells screened within and just below the mixed fill unit (B-2-83, B-4-88) and one well (B-3-81) screened within an isolated shallow perched water interval from 16 to 19 feet below the ground surface. The locations of these wells are shown in Figure L.1. The water-bearing zone within the mixed fill unit is sandy in texture. The distribution of this sand is shown in the fence diagram (Figure E.9) in Section E, Groundwater Monitoring systems. The shallow, perched water zone penetrated by Well B-3-81 is representative of an isolated occurence of the lacustrine sand/silt subunit (described in Section E) and is depicted in cross section A-A', Figure E.6 in Section E.

The sporadic occurence and discontinuous nature of water-bearing sediments beneath Dynecol's facility prevent the determination of a groundwater flow direction or gradient. Therefore, the positioning of the groundwater monitoring system was designed to encompass the facility with monitoring wells.

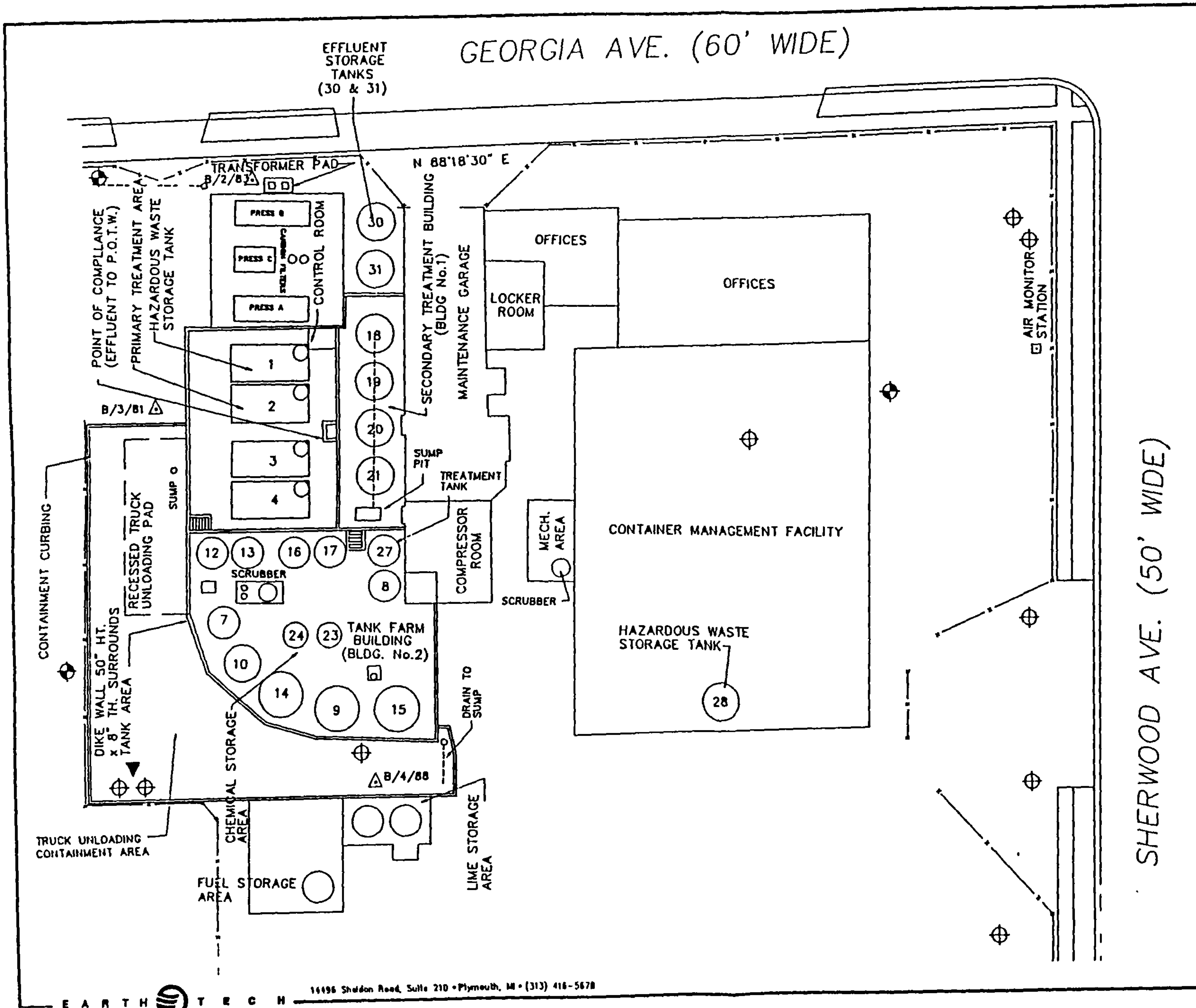
L-1c(ii) Monitoring Well Construction

Monitoring wells that have been installed at Dynecol during three separate investigations were designed to monitor shallow, perched water intervals beneath the facility. This section describes the monitoring well contruction practices that were undertaken during each of the well installation periods.

L-1c(ii)(a) Monitoring Wells Constructed During 1981 Investigation

Monitoring well B-3-81 was converted to a monitoring well from soil boring B-3-81 in July 1981. The well was constructed by

Please refer to page E-4 for original.



LEGEND

- ⌖ FORMER SOIL BORING LOCATION
- △ EXISTING MONITORING WELL LOCATION
- TOP OF CASING ELEVATION IN FEET(USGS)
- ◈ SOIL BORING LOCATION (MONITORING WELLS NOT INSTALLED DUE TO ABSENCE OF GROUND WATER)
- ▼ ABANDONED MONITORING WELL LOCATION

0 15' 30' 60'

SCALE IN FEET

FIGURE E.2. L1

MONITOR WELL & SOIL BORING LOCATION

DYNECOL, INC.
DETROIT, MICHIGAN

NOVEMBER, 1994

EARTH TECH 14496 Sheldon Road, Suite 210 • Plymouth, MI • (313) 416-5678

a previous consultant using a two-inch diameter PVC casing and a bronze well point with the screened interval set at a depth of 16-19 feet below grade. The well presently has a 4-inch galvanized steel surface casing (installation performed in the summer of 1984 to accomodate the pouring of concrete over the area) fitted with a flush mount cap. The concrete around the well head is sloped to direct surface run-off away from the well. The well is located within the existing, contained truck unloading area.

Two additional wells (B-1-83 and B-2-83) were installed by a second consultant in May 1983. These wells were installed to an approximate depth of 8 to 9 feet below the surface. The wells consist of slotted PVC pipe encased in a protective casing and were designed to monitor the quality of the perched water zones in the fill material. A well construction sketch is located in Appendix L.1. Monitoring well B-1-83 will be used exclusively as a piezometer to monitor the shallow ground water elevation due to contamination of this well by cement grout.

L-1c(ii)(b) Monitoring Wells Installed in 1988

Two additional wells, i.e., B-4-88 and B-5-88, were installed in May 1988 by EDI Engineering and Science of Grand Rapids, Michigan. These wells were also designed to monitor the quality of the perched water zones in the fill material. The wells consist of two-inch diameter, 5-foot long, 7-slot, continuous wire-wound, stainless steel screens, set at a depth of 3 to 8 feet below grade. The screens are attached to PVC casing leading up to the surface where the wells are fitted with internally locking flush mount caps.

The wells were drilled with a 4-inch diameter hand auger to a depth of 8 feet below grade. This total depth is two feet below the base of the fill, slightly penetrating the lacustrine clay unit. The annular space associated with the well was backfilled with a silica sand pack around the screened interval and was sealed above the screen with granular betonite grout. A detailed well construction sketch for these wells is presented in Appendix L.1.

L-1c(iii) Effective Ground Water Yield from Monitoring Wells

Monitoring wells set in the limited, inconsistent sources of shallow, perched ground water found beneath Dynecol are not reliable producers of ground water samples. All of the wells are easily bailed dry and recover slowly. Well B-2-83 is seasonally dry, and no sample was obtainable from B-5-88 during well installation. These wells (B-2-83 and B-5-88) are set within sandy clay intervals which are capable of yielding only limited supplies of water during times of increased infiltration.

L-1c(iv) Updated Information on Groundwater Monitoring System

Work to upgrade the groundwater monitoring system at Dynecol was performed to comply with a request by MDNR in September 1992. The objective of this project was to place additional functioning groundwater monitoring wells in the surficial fill material beneath the facility. If sufficient groundwater was not found in the fill, exploration and screening of deeper water-bearing zones (up to 40 feet in depth), if present, was to be done to complete the monitoring system upgrade project.

The scope of work consisted of drilling and screening soils for moisture to a maximum depth of 40 feet in three locations to install replacement wells, if groundwater was present, for three existing wells that were:

* B-5-88, previously abandoned due to building expansion (approved by MDNR on 09/13/91);
* B-1-83, found to be poorly constructed and contaminated with grout material. Only used as a piezometer;
* B-2-83, found to be frequently dry.

In addition, the scope of work included proper abandonment of piezometer B-1-83.

All well borings were drilled using hollow-stem augering techniques with 4 1/4-inch inner diameter hollow stem augers. Split-spoon soil samples were collected continuously to the bottom of the borehole so that any saturated lenses could be detected. The boreholes were advanced until saturated conditions were encountered or to a maximum depth of 40 feet if the borehole was dry. To determine if groundwater was present in the surficial fill at each boring location, the augers were advanced to the base of the fill and then backed up about one foot. The borehole was then allowed to remain open for around 15 minutes to allow groundwater to accumulate, if present. If no groundwater was encountered, the boring was advanced into the clay unit, up to a maximum depth of 40 feet.

The abandonment of the piezometer B-1-83 was done by overdrilling using 4 1/4-inch inner diameter hollow stem augers. Well materials were pulled and the borehole was then sealed from the bottom up with cement/betonite grout.

Drilling and soil screening extended to a depth of 40 feet in each of the replacement well locations (Figure 1). The surficial fill material varied in thickness from 3 feet in boring B-6-93 (replacement for well B-5-88) to 5.3 feet in boring B-7-93 (replacement for well B-1-83). Soil moisture at the base of the fill ranged from dry to very moist. Groundwater did not accumulate in the boreholes drilled into the fill material at any location when the borings were allowed to stand open. At least one thin moist lens was encountered in each boring at depth within the clay underlying the fill material, however, saturated conditions sufficient to yield a groundwater sample were not encountered. As a result, all borings were terminated at a depth of 40 feet and backfilled with a cement/betonite grout, thus leaving a groundwater monitoring system with three wells, i.e., B-2-83, B-3-81, and B-4-88.

L-1d Waiver of Groundwater Monitoring for Container Management Area

All waste handling and storage activities at the container management area take place under a structure that provides protection from precipitation and run-off, and the container management facility is in compliance with Part 6 Rules of Michigan Act 64. Therefore, Dynecol received a waiver for the groundwater monitoring requirements under Rule 299.9611 (3)(a) for the various hazardous wastes and hazardous waste constituents which are stored within the container management facility.

L-1e Chemicals Constituents To Be Monitored

Statistical comparisons will be performed on each of the primary monitoring parameters listed in Table L.2 at each of the three monitoring wells. The primary monitoring parameters consist of the potentially hazardous constituents which are contained in concentrations in exceedance of TC toxic levels (See Table L.2), the metals in wastes generated by metal plating and steel finishing operations, and pH. These parameters will provide the most reliable and the earliest indication of a failure of the treatment and/or secondary containment systems.

In addition to the analytical evaluation of groundwater beneath the site for the primary monitoring parameters, samples from the monitoring wells will be analyzed for the tracking parameters (listed in Table L.2). These parameters (major ions) are naturally occuring in groundwater. Probable recharge area to the shallow, perched groundwater being monitored beneath Dynecol's facility is the unpaved area at the site, which is mainly the auto junkyard to the south and southwest. The surficial composition and topography of these probable zones are subject to change. This may result in significant alteration of the shallow

TABLE L.2
CHEMICAL PARAMETERS TO BE MONITORED

Primary Monitoring Parameters	**Expected Detection Limit (mg/L)***
Aluminum (Al)	0.05
Arsenic (As)	0.001
Barium (Ba)	0.01
Cadmium (Cd)	0.005
Chromium (Cr)	0.025
Lead (Pb)	0.05
Mercury (Hg)	0.0002
Nickel (Ni)	0.05
Selenium (Se)	0.001
Silver (Ag)	0.0005
Zinc (Zn)	0.004
pH	0.05 S.U.
Secondary Monitoring Parameters	
Calcium (Ca++)	0.01
Sodium (Na+)	0.1
Magnesium (Mg++)	0.1
Potassium (K+)	0.1
Sulfate (SO4--)	2.0
Bicarbonate Alkalinity (HCO3-)	5.0
Chloride (Cl-)	1.0
Nitrate (NO3-)	0.01
Carbonate Alkalinity (CO3--)	10
Dissolved Iron	0.02
General Parameters	
Specific Conductivity	1 umhos/cm

*Matrix interference or insufficient sample volume may cause the detection limit to increase.

groundwater chemistry by varying the rate, direction, and chemistry of infiltrating water. Additionally, any future construction activity on Dynecol's property could affect the ionic composition of the shallow, perched groundwater zones. Therefore, these tracking parameters will be monitored, but not statistically evaluated.

The specific conductivity of the groundwater will be analyzed as a general monitoring parameter. This parameter is an effective indicator of the general ionic concentration of the groundwater, but due to the potential variations in basic groundwater chemistry is not a statistically appropriate indicator of the effects of the waste treatment facility on the shallow, perched groundwater.

L.1f Sampling Frequency

One groundwater sample will be collected quarterly from each of the three monitoring wells. Each of these groundwater samples will be analyzed for primary, tracking, and general monitoring parameters listed in Table L.2.

L.1g Sample Collection

The procedures used to sample groundwater can control the quality of the data produced by a monitoring program. The procedures are designed to generate samples and data that are representative of the actual conditions which exist beneath the site at the time of sampling.

L.1g(i) Measurement of Static Water Level

Static water levels are measured each time a well is sampled. The distance from the top of the well casing (a fixed, surveyed datum) to the static water level will be measured to within 0.01 foot with a conductivity sensor probe or with a chalked steel tape. The elevation of the static water level will then be calculated by substracting the distance from the top of the well casing to the static water level from the elevation of the fixed datum. At each well, the top-of-casing elevation is referenced to the National Geodetic Vertical Datum of 1929 (USGS Datum). The elevations of the tops of the casings on the current monitoring wells are included in Table E.2 and on the field data entry forms in Appendix L.2.

Static water level measurements will be recorded immediately following a 2 to 3 minute venting period after opening the well.

No purging activities shall be performed prior to venting of the well and the meaurement of static levels. The device used to measure static levels will be washed with deionized water between wells.

L-1g(ii) Sampling Equipment

Groundwater samples are obtained from monitoring wells with either a Teflon bailer or an electric peristaltic pump with Teflon tubing. These equipment are compatible with the groundwater chemistry and will not alter the heavy metal or major ion composition during sampling.

L-1g(iii) Well Evacuation

Monitoring wells are purged with the use of equipment described above. The goal of purging is to remove stagnant water and replace it with representative formation water prior to sampling. The purge volume (typically three casing volumes) is calculated as follows:

$V = 3IIr^2$ [(well depth in ft)-(depth of water in ft)] X 7.48 where,
V = purge volume (Gal)
II= 3.1416
r = radius of well (ft)

L-1g(iv) Sample Withdrawal and Handling

Groundwater removed from a well will be placed directly into a sample bottle. The transfer will be performed as gently as possible to reduce the introduction of air to the sample, since aeration can promote oxidation and subsequent precipitation of iron compounds which in turn can affect the concentration of primary parameters arsenic and zinc (Stolzenburg and Nichols, 1986).

L-1g(v) Decontamination Procedures

The sampling equipment will be flushed with soapy water, rinsed with tap water, and then rinsed with deionized water between each consecutive sampling event.

L-1g(vi) Field Analyses

The pH and specific conductivity of the groundwater samples may be measured in the field immediately after collection. Standard operating procedures for these field analyses are presented in Appendix L.3. A separate sample will be collected for these analyses to avoid possible contamination of the laboratory samples by the probes. The pH meter will be calibrated and checked with a pH 7.0 buffer before each measurement. The specific conductivity meter does not require calibration in the field. The temperature of each sample will be measured and recorded at the time of the specific conductivity measurement. This temperature is used to correct the specific conductivity to a standard temperature and only represents the tenperature of the sample when the conductivity was measured. Since the temperature is not representative of the groundwater at the well screen, it will not be included in summary of data.

L-1g(vii) Sample Blanks

During each monitoring event, one trip blank will be analyzed for the primary monitoring parameters to ensure that sample contamination from the sample bottles, shipping methods, or laboratory analyses has not occured. When the sample bottles are prepared prior to field usage, one sample bottle will be selected, filled with deionized water, and labeled "trip blank". The trip blank will be transported to the field and sent to the laboratory for analyses along with the other sample bottles. The presence of any contaminant in the trip blank will be noted and attributed to sample contamination. The data will not be used to correct the concentrations in the other samples.

One field/equipment blank will be analyzed for each parameter to evaluate possible sample contamination from the sampling equipment. The blank will be obtained by pouring/running deionized water through the sampling equipment (peristaltic pump or bailer) prior to sampling or following contamination event.

L-1g(viii) Documentation of Sample Collection

The purpose of this detection monitoring program is to generate data on the ground water under Dynecol's facility. The data will be analyzed to evaluate whether the waste management area has impacted ground water quality. Therefore, the sampling equipment and procedures described in the previous sections are designed to generate data which are representative of the ground water under the waste management area.

To properly analyze this data to evaluate any possible effects from the regulated units, the actual procedures which were used in the field to collect the samples must be documented so that future users of the data can review and re-evaluate any possible bias introduced by the sampling procedures. This section describes the documentation procedures which will be used to allow data users to fully evaluate any bias in the sampling methods.

Customized field data entry forms will be used for each well to assure that the sampling procedures are thoroughly documented. The initial field data entry forms are included in Appendix L.2. These forms are designed to provide thorough documentation and to aid in the efficient performance of the sampling event.

No monitoring program design can foresee all the modifications which are required by changing field conditions, and field samplers may be confronted with field conditions which make it impossible to follow the designed sample collection procedures. If this occurs, the field sampler will note these changes on the field data entry form so that the form always represents the actual procedures used during the sample collection. When the field sampler completes a sampling event, all of the information on the field data entry form will be filled in and any deviations from the designed sample collection procedures will be noted. The field sampler will then sign the forms, and the forms will be kept as documentation of the actual sampling procedures used.

L-1h Sample Preservation and Shipment

Complete and unequivocal preservation of samples is practically impossible. Preservation techniques are used to retard the chemical and biological changes that may occur after a sample is taken from its source. Samples collected in this detection monitoring program will be immediately stored in refrigerator at a temperature of 4 Degree C until sent to the appropriate analytical laboratory for analysis. Groundwater samples will be preserved according to the U.S EPA SW-846 methods (or equivalent). These methods are summarized in Table L.3.

L-1i Chain of Custody

A chain-of-custody program will be established for proper documentation of the possession and handling of individual samples, from sample collection in the field through laboratory analysis of the sample. This program will include sample labels which identify the samples, the field data entry forms which record data about collection of each sample, a chain-of-custody record to track the possession of the sample after it has been collected, and laboratory logbooks which contain information about the analyses of the sample in the laboratory. A typical chain-of-custody program used by a contract laboratory is presented in Appendix L.4.

L-1j Analytical Procedures

The analytical procedures which will be used for this program are listed in Table L.3. Method detection limits (MDLs) adopted by contract laboratory will be equivalent to or lower than the reported detection limits (RDLs) established by the MDNR laboratory (Source: MDNR-RDL12-93). Expected detection limits are also listed in Table L.2.

A typical quality assurance/quality control program used by a contract laboratory is presented in Appendix L.4.

TABLE L.3

SAMPLE PRESERVATION AND ANALYTICAL PROCEDURES

Measurement	Container(a)	Preservative(b)	Holding Time(c)	Sample Size (ml)	Reference
Mercury, arsenic selenium	P,G 0.05% $K_2Cr_2O_7$	HNO_3 to pH<2	28 days	100(for all 3)	303E; F(1)
Metals(d), except above	P,G	HNO_3 to pH<2	6 months	100 each 303 A-E (1)	200-289 (2)
ChlorideP,G	None required	28 days	50	407 A;B;D(1)	
Nitrate P,G	Cool, 4°C	48 hours	100	418 C; F (1)	
Bicarbonate alkalinity	P,G	Cool, 4°C	14 days	250	403 (1)
Sulfate P,G	Cool, 4°C	28 days	50	407 A; B; D (1)	
Specific conductance	P,G	Cool, 4°C	28 days	100	205 (1)
Hydrogen ion (pH)	P,G	Determine on site	2 hours	25	423 (1)

a Polyethylene (P) or glass (G).

b Sample preservation should be performed immediately upon sample collection. For composite samples, each aliquot should be preserved at the time of collection. When use of an automatic sampler makes it impossible to preserve each aliquot, then samples may be preserved by maintaining at 4°C until compositing and sample splitting is completed.

c Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permitted, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time. Some samples may not be stable for the maximum time period given in the table. A permitted, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show this is necessary to maintain sample stability.

d Samples should be filtered immediately on site before adding preservative for dissolved metals.

Source: Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations. 40 CFR, Part 136, October 26, 1984.

Method References

(1) "Standard Methods for the Examination of Water and Wastewater", 15th edition; APHA, AWWA, QWPCF, 1980.

(2) "Methods for Chemical Analysis of Water and Wastes", USEPA-600/4-79-020; revised March, 1982.

L-1k Sampling and Analysis Plan

L-1k(i) Tolerance Interval Procedures

Consistent with the April 1989 U.S.EPA "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities--Interim Final Guidance", and the July 1992 Addendum to that document, the tolerance intervals will be calculated individually for each parameter at each well as follows:

Dissolved Metals

Lower limit = 0
Upper limit = x. + ks

pH

Lower limit = x. - ks
Upper limit = x. + ks

Where:
x. = mean of background data
s = standard deviation of background data
k = 2.523 (the tolerance factor corresponding to a 95% level of confidence and 95% coverage, and n = 16 background samples)

If, following analysis, a parameter is found to be non-detectable in one or more samples, numerical data must be subtituted for that measurement(s) to perform the statistical test. In this evaluation the non-detect analytical results will be replaced by alternating values of the method detection limit and zero to allow the statistical analysis. This method is recommended in an August 31, 1990 Michigan Department of Natural Resources, Waste Management Division memorandum regarding suggested statistical language for Act 641 permits.

During each sampling event, the concentration of each primary parameter will be compared to the tolerance interval for that parameter in that specific well. If a parameter is below the detection limit, that parameter will not be classified as greater than the upper limit of tolerance interval regardless of the specific detection limit or upper limit of the tolerance level.

L-1k(ii) Confirmational Sampling for Primary Parameters

When the analysis of the primary parameters at a well lies outside the tolerance interval, the well will be resampled in quadruplicate. The resampling will occur as soon as practical after the completion of the tolerance interval screening. Each of the new samples will be tested for the specific primary parameters which were detected outside of the tolerance interval.
The evaluation of the confirmational analyses is described below and illustrated in Figure 1.

The new analyses for the primary parameters will be compared to the tolerance interval. If two or more are outside the tolerance interval, it will be concluded that the concentration of the parameter in the ground water is significantly different from the background concentration, and Dynecol will comply with the reporting requirements as dictated by MDNR. If all of the analyses are within the tolerance interval, it will be concluded that the concentration of the parameter is not significantly different from the background concentration.

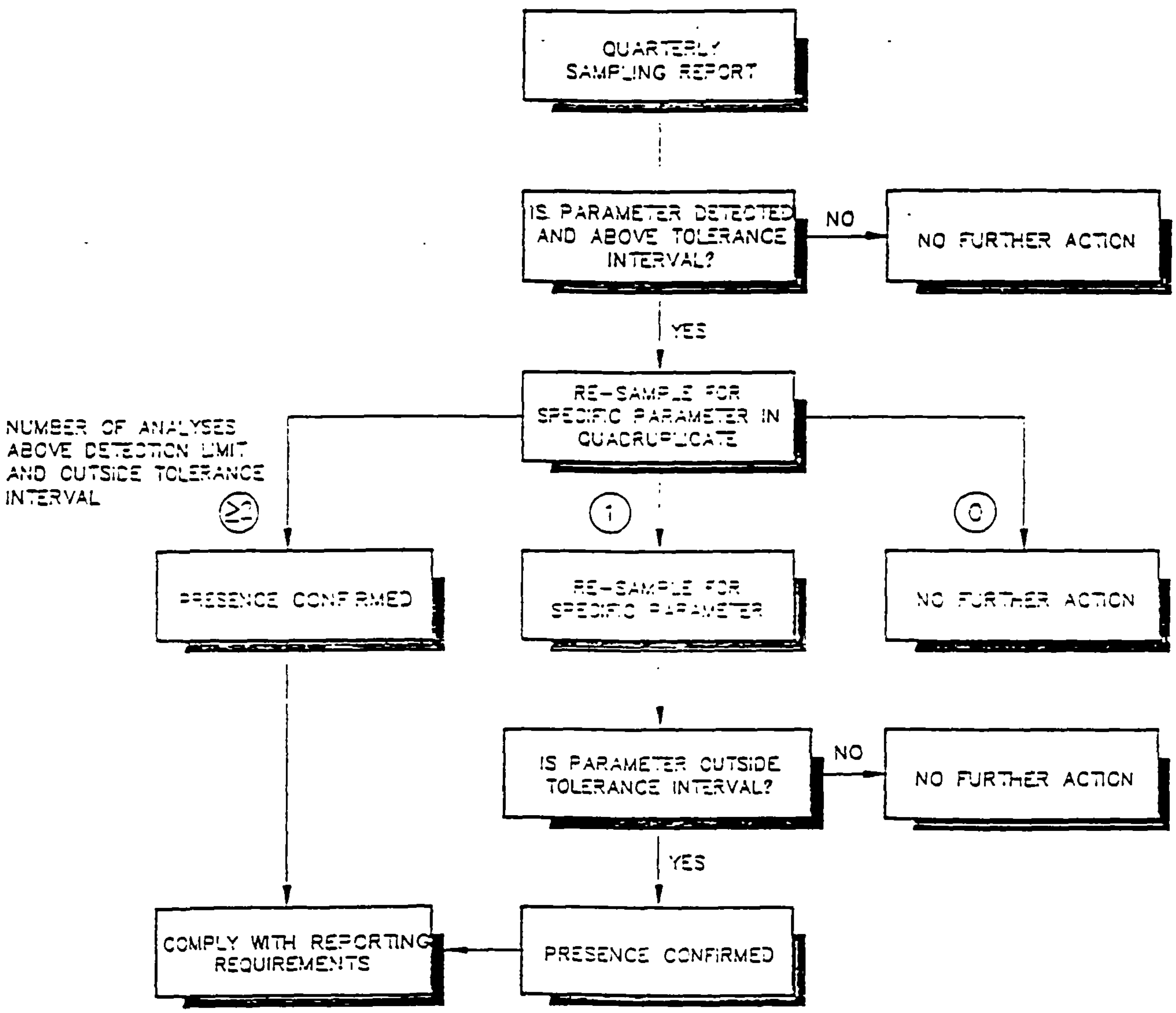
If the concentration of the parameter in only one of the four confirmational samples is outside the tolerance interval, the well will be resampled a second time for the primary parameter as soon as practical after the analyses of the resampling are evaluated. If the concentration of the primary parameter in the additional confirmational sample is outside of the tolerance interval, it will be concluded that the concentration of the parameter in the ground water is significantly different from the background, and Dynecol will comply with the reporting requirements as dictated by MDNR. If the concentration of the parameter in the additional confirmational sample is within the tolerance interval, it will be concluded that the concentration of the parameter is not significantly different from the background concentration.

L-1k(iii) Groundwater Monitoring Up-Date

Per Act 451 R299.9611(3) Dynecol requests a waiver to discontinue all groundwater monitoring activities upon completion of installation of structures that will protect all waste handling and treatment areas not currently covered from precipitation and run off. Dynecol is already in compliance with the requirements of R299.9604.

FIGURE 1

PRIMARY PARAMETER CONFIRMATIONAL SAMPLING



L-2 SOIL MONITORING

All areas of the Dynecol Facility where hazardous wastes are managed are essentially paved with either concrete or blacktop and some specific areas, i.e., the storage bays in the container management area and the unloading pad in the treatment area, are coated with chemical resistant materials, thus protecting the surface soils from possible contamination in the event of a release. Dynecol received a waiver for soil monitoring requirement as referenced by Michigan Act 451 R299.9611(2)(d), prior to the May 2, 1990 issuance of Dynecol's operating permit.

L-3 AMBIENT AIR MONITORING PROGRAM

L-3A Introduction

The purpose of the ambient air monitoring program is to determine Dynecol's contribution to atmospheric concentrations of air pollutants, as may be required by Wayne County Air Quality Management Division or other relevant agencies.

In the treatment plant, the waste treatment process includes primary treatment, secondary treatment, and solids dewatering. The type of wastes received for treatment are hazardous wastes due to their corrosivity, TC metals content, TC organics content, listed wastes K062, K157, F006, and F019, and the Other Listed Hazardous Wastes (see Section C).

The container management facility, located adjacent to the bulk treatment area, meets the minimum setback requirement of 50 feet from the property line (See Drawing C.2.). This facility is designed to receive, store, and transfer hazardous wastes in containers of various sizes and in bulk.

L-3b Monitoring Parameters

The monitoring parameters as described below are applicable to the time of submittal of the Act 451 Permit Reapplication. It is anticipated that these monitoring parameters might be modified as directed by the relevant regulatory agency.

L-3b(i) Inorganics

Monitoring parameters for inorganics are composed of the following: total suspended particulates (TSPs), arsenic, lead, and chromium. The expected analytical detection limits for the above parameters are listed in Table L.5. It is noteworthy that during the fall of 1994, WCAQMD agreed to drop four parameters from the required monitoring list, i.e., cadmium, copper, nickel, and zinc, based on their review of the facility's ambient air monitoring data over a long period of time.

L-3b(ii) Organics

The monitoring parameters for organics and their respective analytical detection limits are listed in Table L.6.

L-3b(iii) Updated information on Monitoring

The ambient air monitoring program for organics (see Table L.6) is temporarily suspended pending WCAQMD's input relative to stack testing for the container facility and issuance of air permits relative to organics emission. Additionally, per Act 451 R299.9611(4), Dynecol requests a waiver to discontinue all ambient air monitoring upon completion of installation of concrete in the existing truck parking area. This request is based on the compliance monitoring results to date and discussions with WCAQMD and MDEQ.

L-3c Samplers and Locations

L-3c(i) Inorganics

The ambient air monitoring system for inorganics consists of three monitoring stations with locations as follows: northeast corner (main office parking lot), east corner (east truck entrance gate), and southwest corner of facility. All locations are selected and approved by Wayne County Air Quality Management Division (WCAQMD). Sampling is performed by use of high-volume samplers.

L-3c(ii) Organics

The air monitoring for organics is performed by use of low-flow personal sampling pumps at the same locations as inorganics.

L-3d Sampling Schedule

L-3d(i) Inorganics

The sampling schedule for the high-volume samplers is every sixth day to coincide with the US EPA national sampling schedule.

L-3d(ii) Organics

The sampling schedule for the organic parameters will consist of every sixth day, as above, during all months except June, July, and August. During these three months, the organic sampling will increase to every third day.

L-3e Sampling Methods

L-3e(i) Total Suspended Particulates and Metals

Each sampling site will contain a high-volume sampler that meets the requirements specified in 40 CFR, Part 50. All samplers will be equipped with continuous flow recorders as a measure of sampling documentation. Each sampler is placed on an elevated platform about ten feet above ground level. The high-volume samplers will be operated according to the procedures outlined in 40 CFR Parts 50 and 58, and the "Quality Assurance Handbook for Air Pollution Measurement Systems," Volume I and II. The samplers will operate on a 24-Hour sampling period each sampling day.

L-3e(ii) Organics

Each sampling site will contain an organic vapor sampling system consisting of a low-flow personal sampling pump and combination carbo trap/carbo sieve tube as collection media. The organic sampling systems will be placed on the high volume platforms, and will operate for a 24-Hour plus 30 minute time period during each sampling day.

L-3f Analytical Methods

L-3f(i) Total Suspended Particulates

The total weight gain of each filter will be determined by using a laboratory analytical balance accurate to 0.1 milligrams. The filters will be desiccated and weighed to a constant weight.

L-3f(ii) Heavy Metals

Analysis of heavy metals will be in accordance with the guidelines of 40 CFR, Part 50, Appendix G.

L-3f(iii) Organics

The collected carbo trap/carbo sieve tubes will be capped and placed on ice until analysis. The sampling media will be thermally desorped and analyzed using a gas chromatograph. Analysis will take place within 1-2 weeks after samples are collected.

TABLE L.5

MONITORING PARAMETERS FOR INORGANICS

PARAMETERS	EXPECTED DETECTION LIMITS (UG/M)
Arsenic (As)	0.30
Chromium (Cr)	1.00
Particulate	1.00
Lead	1.00

TABLE L.6

MONITORING PARAMETERS FOR ORGANICS

PARAMETERS	**EXPECTED DETECTION LIMIT(UG/LM)**
Benzene	0.01
Carbon Tetrachloride	0.01
Chlorobenzene	1.00
Chloroform	0.01
Ethylbenzene	1.00
Methylene Chloride	0.01
Tetrachloroethane	1.00
1,1,1-Trichloroethane	1.00
1,1,2-Trichloroethane	1.00
Trichloroethylene	0.01
Toluene	1.00
Xylene	1.00
1,1,2,2-Tetrachloroethane	0.01
1,1,1,2-Tetrachloroethane	0.01

L-3g QA/QC Procedures

L-3g(i) Calibrations

The high volume samplers will be calibrated after every 500 hours of operation or at least three times per year.

The organic sampling pumps will be calibrated for flow rate and after every sampling episode.

L-3g(ii) Audits

The high-volume samplers will be audited once per year in accordance with 40 CFR Part 58, Appendix B. The device used to audit the samplers will be different from that used to calibrate the samplers.

L-3g(iii) Precision

Precision checks will be in accordance with 40 CFR Part 58, Appendix B. One of the downwind sites will be designated as the precision site. The high-volume filter from this site will be split each sampling episode to obtain the precision sample for the metal analysis.

A second organic sampling system will be placed at this site and will be operated according to the same schedule and procedures as the designated site sampler.

L-3g(iv) Accuracy

Accuracy checks for the metals will be conducted by depositing a known amount of the metal solution on an unexposed filter strip and analyzing it using the same procedures as for the field samples.

Accuracy checks for the organics will be accomplished by spiking blank carbo trap/carbo sieve tubes with known quantities of organic solutions and determining the desorption efficiency.

L-3h Meteorological Conditions

The wind speed and wind direction conditions during each sampling period will be collected from the meteorological station at Detroit City Airport.

L-3i Reporting Requirements

L-3i(i) Monitoring Data

All monitoring data (including meteorological data) are reported to WCAPCD within 30 days after the end of the month for which the data were collected. The precision and accuracy data will be submitted in the AIRS format.

L-3i(ii) Precision and Accuracy Data

All precision and accuracy data will be reported to WCAPCD within 30 days after the end of the quarter for which the data were collected. The precision and accuracy data will be submitted in the AIRS format.

L-4 EFFLUENT MONITORING PLAN

An effluent monitoring plan has been developed and this plan consists of the following:

- effluent sample collection procedures (machine collected composite samples); and
- effluent sample analytical procedures.

L-4a Effluent Sample Collection Procedures(Machine Collected Composite Samples)

Twenty-four hour composite samples will be collected using automatic sampling equipment installed at a sampling location approved by DWSD. This sampling location provides access to all effluent discharged to the public sewer system from the treatment operations at the facility.

Composite samples will be collected using an ISCO (or equivalent) automatic sampling equipment. The sampling equipment consists of:

- peristaltic pump;
- pump controller, as necessary to control the frequency of pump operation and the volume of sample delivered with each pumping cycle;

- polyethylene tubing from the point of sample intake to the pump suction port, and from the pump discharge to the composite sample container; and
- polyethylene composite sample container with five-gallon capacity.

During the sampling period, the automatic sampler will be programmed to initiate discrete sample collection in a flow-proportioned mode. Each discrete sample will be directed to a composite sample container within the automatic sampler, resulting in a 24-hour composite sample of sufficient volume to perform the analytical testing required. At the end of each 24-hour sampling period, the composite sample will be thoroughly mixed in order to suspend any solids which may have settled in the container. One liter of the homogenized composite sample will be transferred into a polyethylene or glass container for analyses as required by the discharge permit. Sampling equipment, tubing, and any sample container will be thoroughly washed with 1+1 nitric acid and rinsed with distilled water prior to reuse.

L-4b Analytical Procedures-Effluent Analysis

Composite samples of effluent discharge to City of Detroit sewage system will be collected each operating day. Periodic analysis of daily composite samples or individual grab samples will be conducted for the parameters and frequency specified in Dynecol's discharge permit with DWSD. Samples will be analyzed by a qualified local laboratory. A typical contract laboratory used by Dynecol is as follows:

Midwest Analytical Services
Metropolitan Center for High Technology
2727 Second Avenue
Detroit, MI 48201

Analytical methods used by Midwest Analytical (or another equivalent lab) will be in accordance with SW 846 (U.S. EPA) and/or 40 CFR Part 136.

Additionally, DWSD currently collects daily composite and grab samples for approximately 25 to 50% of all effluent from Dynecol. This sampling is used for compliance testing by DWSD, but also serves as process confirmation when results are reviewed by us. Dynecol submits all of this DWSD compliance data to MDEQ.

L-5 Environmental Monitoring Report

Dynecol submits a Monthly Environmental Monitoring Report to MDEQ-WMD on or about the 15th of each month. This report includes all process confirmation data for filter cake and effluent collected by Dynecol since its last monthly report. As noted, any air monitoring data is channeled through WCAQMD who then communicates as required to MDEQ. Any ground water monitoring reports are sent to MDEQ under separate cover.

APPENDIX L.3

STANDARD OPERATING PROCEDURES FOR FIELD DETERMINATION OF pH AND SPECIFIC CONDUCTIVITY

STANDARD OPERATING PROCEDURE FOR FIELD DETERMINATION OF pH, METHOD 423

Soil Sediment, Groundwater, Surface Water, Leachate Analysis

1.0 METHOD SUMMARY

1.1 This is a determination of the activity of the hydrogen ions by potentiometric measurement.

2.0 INTERFERENCES

2.1 Temperature is an important factor. The temperature compensator attached to the instrument automatically corrects the pH value displayed by the meter.

3.0 INSTRUMENTATION

Altex pH meter
pH probe
Temperature compensator

4.0 MATERIALS AND REAGENTS

Sample cups
Prepared pH 4, 7, 10 standards for calibration

5.0 CALIBRATION

During initial setup and calibration, two standards are run.

5.1 Clear the meter by pushing the clear button.

5.2 The prepared pH 7.00 standard is agitated with the pH probe and the standard number 1 button is pushed.

5.3 After the "eye" symbols come on indicating this portion of the calibration procedure is complete, the probe is rinsed with distilled water.

5.4 The second standard pH 10.00 or pH 4.00 is then agitated with the pH probe while pushing the calibration button. When the "eye" symbol reappears, calibration is complete.

5.5 Verify meter calibration by analyzing the third standard as described in Section 6.0. A +0.05 pH acceptance limit should be used in determining calibration acceptability. If unacceptable, recalibrate as described in 5.1.

6.0 PROCEDURE

6.1 Prepare and analyze samples without delay.

6.2 Place about 50 mls of sample into a plastic cup and stir with the pH probe.

6.3 Allow the pH reading to stabilize. Record the pH value on the well sampling record form. Rinse the probe with distilled water and verify calibration by submersing in a prepared pH standard as described in 5.5.

6.4 Proceed to the next sample or location; verify calibration before each measurement.

7.0 Quality Control

7.1 Document all calibrations and verification readings, including time and meter readings.

7.2 Run duplicate measurements on each batch or every 10th sample.

Standard Operating Procedure for Field Determination of Conductivity, Method 205

Groundwater, Surface Water, and Wastewater

1.0 Method Summary

1.1 Conductivity is a numerical expression on aqueous solution's ability to carry an electric current. This is dependent on the presence of ions, their concentrations, mobility, valence, and on the temperature of the solution.

1.2 The conductivity probe is immersed in a sample and the conductivity is read directly off of the meter scale.

2.0 Interferences

2.1 Temperature greatly influences the electrolytic conductivity of a sample. Therefore, it is extremely important accurate temperature measurements are made.

3.0 Instrumentation

3.1 Conductance meter YSI Model 32.

4.0 Materials and Reagents

Conductivity cell
Thermometer
Specimen containers

5.0 Standard

5.1 Primary Working Standard:

Potassium chloride standard 0.01N: Dissolved 0.7456 g anhydrous KCl in deionized water and dilute to 1 liter at 25°C. Conductivity = 1,413 umhos/cm.

6.0 Calibration

6.1 Check the conductivity of the standard prior to actual sample evaluation. Record the temperature of each standard.

6.2 Calculate the conductivity at 25°C. making adjustments for the temperature, see 8.1 for equation.

7.0 Procedure

7.1 Rinse the cell with deionized water.

7.2 Measure the conductivity of each sample by swirling the cell in a portion of the sample. Record the conductivity reading and the temperature.

7.3 Calculate the conductivity at 25°C as outlined in Section 8.1.

8.0 Calculations

8.1 Conductivity at 25°C = $$\frac{K}{1 + 0.0191\ (t-25)}$$

K = measured conductivity
t = temperature of sample, °C

9.0 Quality Control

9.1 Document all calibrations and verification of readings including time and meter readings.

9.2 A blank of deionized water is run and should have a conductivity of less than 5 umhos/cm.

9.3 The initial standard is checked after every 10th sample.

APPENDIX L.4

QUALITY ASSURANCE/QUALITY CONTROL PROGRAM FOR TYPICAL LABORATORY USED BY DYNECOL

MIDWEST ANALYTICAL SERVICES, INC.

QUALITY ASSURANCE\QUALITY CONTROL

MAS

MIDWEST ANALYTICAL SERVICES, INC. (MAS) takes pride in its commitment to provide reliable and valid analytical data to its clients. Midwest is State of Wisconsin certified and Chemical Waste Management approved. Midwest is a member of ASTM and of the American Water Works Association (AWWA). Each employee at MAS is involved in a QA/QC program to provide successful statistical analysis of data. The quality assurance program at MAS involves the analysis of 25% quality control samples to ensure instrument, operator and method reliability. Quality control samples include blanks, standards, spikes, duplicates, intralab samples and external performance evaluation studies.

QUALITY CONTROL OF ANALYTICAL TESTING

At MAS quality control is the responsibility of every employee. Before every batch of samples are analyzed, the analyst must verify the performance level of the equipment by analyzing a standard (typically a midpoint) and a quality control sample (value unknown to operator). The standard and sample values must fall within accepted control ranges set either by the EPA or the quality assurance department.

With every batch of client samples, a duplicate and a matrix spike duplicate is performed on one of the samples.

A duplicate is created from every tenth sample of each matrix per test during sample login. These duplicates are analyzed and approved by quality assurance before sample results are reported to the client.

In conjunction with the intralab programs described above MAS actively participates in five external proficiency evaluation programs:

- Analytical Products Group Proficiency Environmental Testing
- Chemical Waste Management Round Robin Program
- EPA Water Supply Studies
- EPA Water Pollution Studies
- Wisconsin State Laboratory of Hygiene Environmental Proficiency Testing

These performance evaluation samples are analyzed on a quarterly basis. Results from these programs are used for laboratory certification.

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

There are special quality control procedures for TCLP which deal with matrix spikes and the effect they have on the final calculations of TCLP analytes. TCLP analyte values are corrected by matrix spike recovery data. Matrix spikes are analyzed every twentieth client sample. Ten percent of each TCLP matrix are duplicated.

METHODOLOGY

All analytical procedures are performed in strict accordance with EPA, CFR, ASTM and Standard Methods procedures. A bench copy of each method used (Standard Operating Procedure) is kept at each testing location. All analytical reports specify references to methodology.

FIELD SAMPLING

Samples are collected according to EPA guidelines. Proper container and sampling equipment are chosen based upon analysis required. Disposable equipment is used for sampling, whenever possible, to eliminate contamination. Other equipment is carefully cleaned before reuse. Proper chain of custody and field information is completed for every sample taken by Midwest Analytical Services, Inc.

SAMPLE TRACKING AND HANDLING

Midwest tracks each sample by entering client information and analysis required into a computerized data base. The data base contains sample turnaround time, test data and invoicing information. This facilitates the scheduling and prioritization of work. The sample is handled in the laboratory according to a tracking procedure that allows the sample to be located at any time. The system at Midwest ensures that samples will be analyzed within the guaranteed turnaround time.

INSTRUMENTS

MAS ensures proper instrument performance by having them maintained and serviced, as needed, by the manufacturer's qualified field engineers. Maintenance and service logs containing this information are kept next to each instrument. These books also contain logs on the preventive maintenance that is performed regularly by MAS analysts.

LABORATORY WATER

High quality ASTM Type II water is used by Midwest Analytical Services, Inc. In organic testing, ASTM Type I is used for ultra-sensitive testing. Our water is analyzed frequently to ensure consistency in blanks. Both types of water are checked weekly to certify the water as meeting ASTM and EPA standards.

ANALYTICAL STANDARDS

MAS uses NIST, EPA or AALA traceable standards purchased from multiple sources to verify proper equipment function and reliable standard preparation. MAS also prepares its own standards for special matrices if they are not commercially available.

COMPRESSED GASES

All gases are of high purity, which meet or exceed standards set by the instrument manufacturers and by the EPA. They are stored, used and transported in accordance with proper safety regulations.

REAGENTS AND CHEMICALS

All chemicals and reagents are of at least ACS grade. Ultra high purity reagents are used as necessary for specific situations. MAS stores all chemicals and reagents in accordance with OSHA and NFPA regulations.

GLASSWARE AND CLEANING

Disposable plasticware and glassware are used whenever possible to avoid cross-contamination. The glassware used at MAS is either Borosillicate or Pyrex brand glass. All glassware is cleaned with the appropriate solution such as alconox soap, orange power, nitric acid or a reagent grade solvent and rinsed several times with deionized water.

PERSONNEL AND TRAINING

Midwest staff is selected based on academic and analytical training, previous work experience, interest in achieving a 'team' goal and a positive attitude toward science and analytical chemistry.

TECHNICAL MANAGERS

Richard A. Kern: Laboratory Director

Duties: Oversees laboratory activities, supervises analytical and financial activities of the company.

Rich studied chemistry at Lawrence Institute of Technology. Since then he has worked as a technician at Technical Services, Detroit Diesel, and Nelson Industrial Services. He also worked as lab manager for two years at the General Motors Corporation Technical Center before going into business for himself. From these jobs Rich gained a vast array of both technological and business experience.

Rich is currently a member of the American Chemical Society. He has been trained and certified for the operation, interpretation, and quantization of GC/MS ITS-40 by the Finnigan Institute, Quadrapole GC/MS operation by Hewlett Packard and the Inductive Coupled Plasma Unit at Thermo-Jarrell Ash. He has attended American Chemical Society Short Courses on Quality Assurance for Analytical Chemistry, Water and Waste (SW-846 Methods), and Laboratory Safety and Health. He attended an Industrial Waste Generator Seminar sponsored by LICA, the EPA Symposium for Waste Testing and Quality Assurance in 1991 and the Environmental Automation of Robots by Zymark.

Kevin J. O'Mara: Laboratory Director

Duties: Oversees laboratory procedures, supervises analytical and financial activities of the company.

Kevin, co-founder of MAS, received his Bachelor of Science in Chemistry from Adrian College where he specialized in organic and physical chemistry. He worked as a technician at Environmental Quality Labs before founding MAS. Experience he acquired there included quality control supervision, wastewater and hazardous waste site sampling, GC/MS operation, HPLC operation, analysis by atomic absorption, and many wet chemistry tests.

Kevin has been trained and certified for the operation and quantization of GC/MS ITS-40 by the Finnigan Institute, for Quadrapole GC/MS operation by Hewlett Packard and for the operation of the Inductive Coupled Plasma unit from Thermo-Jarrell Ash. Kevin has attended the American Chemical Society Short Courses on Air Toxics Monitoring and Environmental Law and Regulations and the EPA Symposium for Waste Testing and Quality Assurance in 1989 and 1991.

TECHNICAL MANAGERS

Nitin D. Barad: Laboratory Manager

Duties: Supervises laboratory operation, reviews analytical data, attends to client needs.

Nitin earned his Master of Science in Chemical Engineering and Master of Science in Hazardous Waste Management from Wayne State University. He has passed the Hazardous Materials Manager Exam (CHMM) and also Part I of the Professional Engineer's Exam (EIT). He received his Bachelor of Chemical Engineering from Bangalore University in India. In addition to Nitin's extensive educational background, he also brought a wealth of experience to MAS. Before coming to MAS, Nitin worked as an Environmental Engineer at General Motors Corporation and at Monsanto Company. He has worked as a Graduate Research Assistant in the Department of Chemical Engineering at Wayne State University and as a Research Assistant as BASF Corporation. Nitin has been involved in Act 64 application, Community Right to Know, Chemical Database Management, EPA R-Form Reporting, and the development of an expert system for the safe handling of hazardous materials.

He has expertise in the fields of air sampling and analysis, industrial toxicology, laws and administration of hazardous waste, emergency spill response, biological waste disposal, land disposal, safety in the chemical process industry, waste minimization and chemistry of industrial processes. At MAS he has experience in metal analyses by inductive coupled plasma, atomic absorption, vapor generation accessory and many inorganic laboratory tests. He has also been trained in HPLC, FTIR, GC and GC/MS operation.

Krystyna Czyzo: Quality Assurance/Quality Control Coordinator

Duties: Organizes organic quality assurance documentation, supervises quality control in organics and organics preparations laboratories, reviews quality control data, reports quality control activities to management.

Krystyna was educated at the Lodz School of Technology in Lodz, Poland. There she majored in the chemistry and technology of polymers and received her Master's in Chemical Engineering. Krystyna brought a wide variety of experience through the positions she held before coming to Midwest including senior chemist at Film Processing Laboratories, Quality Control Manager at Lodz Tanning Corporation, and Estimator at K-R Automation Corporation. Krystyna has attended the EPA Symposium on Waste Testing and Quality Assurance in 1991. At MAS, she has been trained in sample preparation, gas chromatography and GC/MS operations.

TECHNICAL SUPPORT STAFF

Kathleen Hagan: Inorganic Quality Assurance Manager

Randy Pantelis: Organic Quality Assurance Manager

Jim Herman: Organic Department Leader

Matthew Keaton: GC/MS Operator

Ed Harrison: GC/MS Operator

Thomas Tomicki: GC Operator

Navnit Ghuman: GC Operator

Kent Williams: Inorganic Department Leader

Don Massie: Metal Laboratory Technician

Robert Swiger: Metal Laboratory Technician

Larry Dimitrievski: Metal Laboratory Technician

Jasper Recto: Wet Chemistry Technician

Meghan Gerigk: Wet Chemistry Technician

Lisa Notte: Organic Prep Technician

Zarco Dimitrievski: Organic Prep Technician

Kate McCarthy: Office Manager

Basher Tiwana: Computer Systems

Stephanie Jager: Client Service Manager

Norman Brooks: Client Service

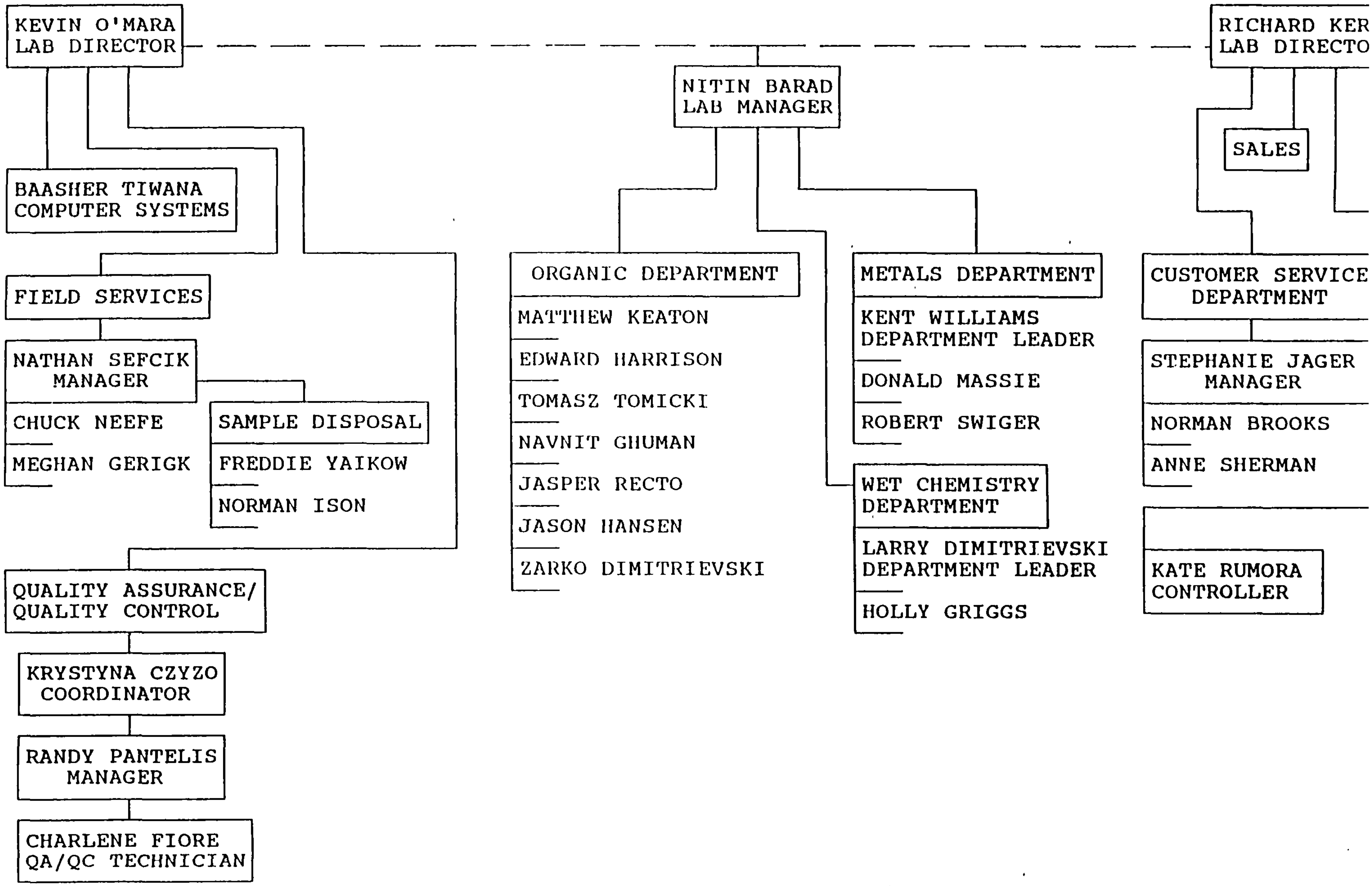
Charlene Fiore: Client Service

Fred Yaikow: Sample Disposal Technician

Chuck Neefe: Field Crew

Norman Ison: Field Crew

MIDWEST ANALYTICAL SERVICES, INC.
ORGANIZATIONAL CHART



CERTIFICATIONS

Certificate	Issued To	Issued By
Hazardous Waste Control	Nitin Barad	Wayne State University
MSD DOS Operation (GC/MS)	Kevin O'Mara	Hewlett Packard
MSD DOS Operation (GC/MS)	Richard Kern	Hewlett Packard
Basic Mass Spectral Interpretation	Richard Kern	Finnigan MAT
Advanced Mass Spectral Interpretation	Richard Kern	Finnigan MAT
MAT ITS 40 Operation (GC/MS)	Richard Kern	Finnigan MAT
MAT ITS 40 Operation (GC/MS)	Kevin O'Mara	Finnigan MAT
MAT ITS 40 Quantitation	Richard Kern	Finnigan MAT
MAT ITS 40 Quantitation	Kevin O'Mara	Finnigan MAT
Inductively Coupled Plasma Emission Spectroscopy Operation	Richard Kern	Thermo Jarrell Ash
Inductively Coupled Plasma Emission Spectroscopy Operation	Kathleen Hagan	Thermo Jarrell Ash
Advanced Inductively Coupled Plasma Emission Spectroscopy Operation	Kent Williams	Thermo Jarrell Ash
Advanced Inductively Coupled Plasma Emission Spectroscopy Operation	Kevin O'Mara	Thermo Jarrell Ash
Vapor Generation	Richard Kern	Varian
Analyzing Environmental Samples by Gas Chromatography	Randy Pantelis	Varian
Environmental Automation of Robots for Sample Preparation	Richard Kern	Zymark
Environmental Automation of Robots for Sample Preparation	Shirley Yaikow	Zymark
Quality Assurance for Analytical Chemistry	Richard Kern	American Chemical Society
Laboratory Safety and Health	Kathleen Hagan	American Chemical Society
Laboratory Safety and Health	Richard Kern	American Chemical Society
Environmental Law and Regulations	Kevin O'Mara	American Chemical Society
Environmental Analytical Chemistry: Water and Waste (SW-846 Methods)	Richard Kern	American Chemical Society

CERTIFICATIONS

Certificate	Issued To	Issued By
Environmental Analytical Chemistry: Air Toxics Monitoring	Kevin O'Mara	American Chemical Society
New Sample Preparation Methods for Chemical Analysis	Shirley Yaikow	American Chemical Society
Industrial Waste Generation	Richard Kern	LICA
LOTUS in the Laboratory: Putting Spreadsheets Graphics and Database Management Software to Work	Basher Tiwana	American Chemical Society

FACILITIES AND EQUIPMENT

WASTEWATER

(1) Sigma 3300 Steamline Computer Driven 24hr Discrete Sampler
(7) ISCO 2900 24hr Discrete Sampler
(1) ISCO 3220 Flow Meter
(1) 224 PCXR3 Aircheck Sampler

CHROMATOGRAPHY

(1) O-I Corp Organic Concentrator
(1) Tekmar AquaTek 50 Autosampler
(6) LSC 2000 Organic Concentrator
(3) LSC 2016 Organic Autoconcentrator
(5) 8100 Direct inject auto samplers
(2) VARIAN 3400 GC - Dual ECD
(1) VARIAN 3400 GC - PID, HALL
(1) VARIAN 3400 GC - FID, HALL
(1) VARIAN 3700 GC - FID, TCD
(1) VARIAN 3700 GC - FID, TCD, ECD
(1) HP Chem Station Data System
(2) 650 Data Stations
(2) HP5890 GC - ECD, FID
(1) Dynatech Autosampler
(1) HP Multi-tasking Chromatography Data
(1) VARIAN Saturn GC/MS Ion Trap
(2) GC/MS Finnigan ITS 40 Ion Trap
(2) GC/MS HP 5971 Quadrapole
(1) VARIAN 2510 HPLC Pump
(1) VARIAN 2050 Absorbance Detector
(1) Gow MAC 580 Dual TCD

HEAVY METAL ANALYSIS

(1) TJA Atom Scan 25-ICP
(1) TJA 96 Auto Sampler
(1) Leeman Labs PS200 Automated Mercury Analyzer with autosampler
(1) Varian 975 Flame AA
(2) Varian 1475 Flame AA
(1) Varian VGA 76 Vapor Generator
(2) Varian Model 55 Auto Sampler
(1) Varian GTA 95 Furnace
(1) Varian PSD 96 Auto Sampler
(1) Jerome 511 Mercury Analyzer
(1) Perkin Elmer 4100ZL THGA with AS-70 autosampler

TOTAL ORGANIC ANALYZERS

(1) Dohrman DX-20A TOX Analyzer
(1) Dohrman AD-3 TOX Adsorption Module
(1) Dohrman DC-190 TOC Analyzer with boat sampler and range extension kit

FACILITIES AND EQUIPMENT

SPECTROSCOPY
(1) HACH DR/2000
(2) Perkin Elmer FTIR - 1016

EXTRACTION AND SAMPLE PREPARATION DEVICES
(6) Tecator Soxtec
(5) Zymark TurboVap 200
(1) Zymark LV50 TurboVap
(1) ABC Autovap 600 GPC
(1) Zymark BenchMate Workstation
(1) Branson 1200 Sonicator
(1) Fisher 550 Sonifier
(1) Branson 450 Sonifier
(1) Precision Waterbath
(1) Parr Microwave Digestion System
(3) NEY 300 Ultrasonik
(50) TCLP Zero Head Space Extractors (ZHE)
(100) TCLP Semi-Volatile and Metal Extractors

BALANCES
(1) Sartorius, 0.1 mg
(1) American Scientific, 0.1 mg
(1) Fisher-Scientific A250, 0.1 mg
(1) OHAUS 100, 0.1 mg
(2) OHAUS GT400, 0.01 g
(2) OHAUS GT4000, 0.1 g

pH AND OTHER POTENTIAL MEASUREMENTS
(1) Orion Research: microprocessor pH/mV meter 811
(1) EXTECH OYSTER: portable pH meter
(1) Orion 420A pH meter
(1) YSI Dissolved Oxygen Meter 51B
(1) YSI Dissolved Oxygen Probe 5730
(2) Corning portable pH meter
(1) Analytical Measurement Model 30 continuous pH monitoring system
(1) Hach conductivity/TDS meter

Orion Ion Selective Electrodes
(1) Fluoride
(1) Iodide
(1) Chloride
(1) Bromide
(1) Nitrogen as Ammonia
(1) Nitrogen as Nitrate
(1) Expandable ion analyzer EA940 with stirrer & autotitrator
(1) Orion Glp printer

DISTILLATION APPARATUS
(4) Total Cyanide Unit
(5) Reactive Digestion Unit
(2) Phenol Unit

FACILITIES AND EQUIPMENT

OTHER EQUIPMENT

(1) Parr Oxygen Bomb
(1) Pensky-Martens Close-Cup flashpoint tester
(1) ERDCO Rapid Tester
(1) Brookfield DV-I Viscometer
(1) IEC HN-SII Centrifuge
(1) Sanpla Drykeep Dehumidifier
(2) Equatherm Incubator
(1) Sargent Furnace
(1) Thermolyne 2000 Furnace
(1) Tempcon Oven
(1) Damon/IEC Centrifuge
(1) Waters Conductivity Detector
(3) Toxicap 1200 Hood
(1) Gallencomp Autoflash
(1) Dataplate Digital hotplate with stirrer
(1) Sartorius Moisture Analyzer
(1) Alpkem Distillation Apparatus with Autosampler

REFERENCES

1. Methods for the Determination of Organic Compounds in Drinking Water, Supplement 1. USEPA, 600/4-90/020, July 1990.

2. Code of Federal Regulations; Title 40, Protection of Environment; Chapter 1, Environmental Protection Agency; Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants. The Federal Register, July 1990.

3. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. USEPA, SW-846, Third Edition, November 1990.

4. Methods for Chemical Analysis of Water and Wastes. USEPA, 600/4-79-020, March 1983.

5. Annual Book of ASTM Standards. American Society for Testing Materials, vols. 1-15, 1992.

6. Standard Methods for the Examination of Water and Wastewater. American Public Health Association, 17th Edition, 1989.

7. Orion Guide to Water and Wastewater Analysis. Orion Research, WeWWG/5880, 1985.

MIDWEST ANALYTICAL SERVICES, INC.

QUALITY ASSURANCE PROJECT PLAN

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MIDWEST ANALYTICAL SERVICES, INC.
QUALITY ASSURANCE PROJECT PLAN

PREPARED BY:

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVENUE
DETROIT, MICHIGAN 48201

REVISION 8

SEPTEMBER 1993

FILE: QA/QC A:\QAPP8.#1-7

APPROVED BY:

LAB DIRECTOR: Richard A K

QUALITY ASSURANCE: Krystyna Czyzio

1.0 INTRODUCTION

Midwest Analytical Services, Inc. (MAS) is an incorporated company in the state of Michigan. MAS was founded on the theory that environmental testing does not have to take months or even weeks to complete. Midwest Analytical Services completes all it's analyses within five to ten working days which is a very competitive turn-around-time. The lab is qualified to perform analyses in the areas of metals, wet chemistry, gas chromatography and gas chromatography/mass spectrometry. Quality assurance plays a major role in the laboratory. Without quality assurance, Midwest could not confidently report data to its customers. The quality assurance department's goal is to ensure the data, for every test method performed, is accurately reported. The quality assurance program also ensures and maintains a standard of performance for all aspects of the facility, personnel, performance, record keeping and reporting to be consistent and in compliance with EPA and state and local governments' regulations.

2.0 PROJECT DESCRIPTION

2.1 Scope of Services

The goal of Midwest Analytical Services' Quality Assurance Department is to provide its clients with reliable and accurate data. This data is used by clients to determine if their waste products are hazardous or non-hazardous according to the EPA, state and local governments. Therefore, it is the job of quality assurance to be certain that all analytical data is accurate and reliable. The following is a list of activities/analyses performed on and off site in the general areas of sampling, waste stream monitoring, underground storage tanks, toxicity monitoring through TCLP, drinking water and other miscellaneous waste.

<u>Metal Analytes</u>

Aluminum	Magnesium	Thallium
Antimony	Manganese	Titanium
Arsenic	Mercury	Tin
Barium	Molybdenum	Tungsten
Beryllium	Nickel	Vanadium
Bismuth	Niobium	Yttrium
Boron	Osmium	Zinc
Cadmium	Palladium	Zirconium
Calcium	Phosphorus	
Chromium	Platinum	
Chromium, Hexavalent	Potassium	
Cobalt	Rhenium	
Copper	Rubidium	
Gallium	Ruthenium	
Germanium	Scandium	
Gold	Selenium	
Hafnium	Silicon	
Indium	Silver	
Iridium	Sodium	
Iron	Sulfur	
Lanthanum	Strontium	
Lead	Tantalum	
Lithium	Tellurium	

2.0 Project Description (cont)
2.1 Scope of Services (cont)

Sampling
Wastewater Sampling
Air Sampling
Soil Sampling
Wipe Sampling
Drum Sampling
Flow Metering
Stormwater Monitoring

Wet Chemistry Analysis
Acidity
Alkalinity
Bicarbonate
Biochemical Oxygen Demand
Bottom Sediment and Water
Bromide
BTU/lb
Calcium Oxide (percent)
Carbonate
Chemical Oxygen Demand
Chloride
Color
Conductivity
Cyanide, Amenable
Cyanide, Free
Cyanide, Reactive
Cyanide, Total
Density
Dissolved Oxygen
Fats, Oil and Grease
Flashpoint (Ignitablilty)
Fluoride
Formaldehyde
Hardness
Hypochlorite
Iodide
Methylene Blue Active Substances (MBAS)
Nitrogen as Ammonia
Nitrogen as Nitrate
Nitrogen as Nitrite
Odor
Orthophosphate
Oxidation Screen
Paint Filter Test
Percent Ash
Percent Solids
Percent Water
pH (Corrosivity)
Phenol
Phosphate
Radiation Screen
Residual Chlorine
Specific Conductance
Sulfate
Sulfide, Reactive
Sulfide, Total
Sulfite
Sulfur
Surfactants
Temperature
Total Bacteria
Total Dissolved Solids
Total Halogens
Total Kjeldahl Nitrogen
Total Organic Carbon
Total Organic Halogens
Total Petroleum Hydrocarbons
Total Solids
Total Suspended Solids
Turbidity
Viscosity
Water Mix Screen

2.0 Project Description (cont)

2.1 Scope of Services (cont)

<u>Organic Analytes</u>

Acenaphthene
Acenaphthylene
Acetone
Acrolein
Acrylonitrile
Aldrin
Aniline
Anthracene
Benzene
Benzidine
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(ghi)perylene
Benzoic acid
Benzo(k)fluoranthene
Benzyl alcohol
Benzyl chloride
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bromobenzene
Bromodichloromethane
Bromofluorobenzene
Bromoform
Bromomethane
4-Bromophenyl phenyl ether
n-Butyl alcohol
Butyl benzyl phthlate
Carbon disulfide
Carbon tetrachloride
Chlordane
4-Chloroanaline
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
4-Chloro-3-methylphenol
Chrysene
Cresol
Cyclohexanone
2,4-D
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dibenzo(ah)anthracene
Dibenzofuran
Dibromochloromethane
Dibromomethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
3,3-Dichlorobenzidine
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
2,4-Dichlorophenol
1,2-Dichloropropane
1,1-Dichloropropene
2,2-Dichloropropene
cis-1,3-Dichloropropylene
trans-1,3-Dichloropropylene
Dieldrin
Diethyl phthalate
1,4-Difluorobenzene
2,4-Dimethylphenol
Dimethyl phthalate
Di-n-butyl phthalate

2.0 Project Description (cont)

2.1 Scope of Services (cont)

Organic Analytes (cont)

2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octylphthalate
1,2-Diphenylhydrazine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl acetate
Ethyl benzene
Ethyl ether
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachlorobutadiene
Hexachloroethane
2-Hexanone
Indeno(1,2,3-CD)pyrene
Isobutanol
Isophorone
Lindane
Methanol
Methoxychlor
2-methyl-4,6-Dinitrophenol
Methylene chloride
Methyl ethyl ketone
Methyl isobutyl ketone
2-Methyl naphthalene
4-Methyl-2-pentanone
2-Methylphenol
3-Methylphenol
4-Methylphenol
Methyl-tert-butyl ether
Naphthalene
2-Nitroanaline
3-Nitroanaline
4-Nitroanaline
Nitrobenzene
2-Nitrophenol
4-Nitrophenol
n-Nitroso-dimethylamine
n-Nitroso-di-n-propylamine
n-Nitroso-diphenylamine
PCB-Arochlor 1016
PCB-Arochlor 1221
PCB-Arochlor 1232
PCB-Arochlor 1242
PCB-Arochlor 1248
PCB-Arochlor 1254
PCB-Arochlor 1260
Pentachlorophenol
Phenanthrene
Phenol
Pyrene
Pyridine
Styrene
2,3,7,8-Tetrachlorodi-
benzo-p-dioxin (dioxin)
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
sym-Tetrachloroethane
Tetrachloroethylene
Toluene
Toxaphene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
1,2,3-Trichloropropane
1,1,2-Trichloro-1,2,2-
trifluoroethane
2,4,5-TP (Silvex)
Vinyl acetate
Vinyl chloride
Xylene, total
o-Xylene
m-Xylene
p-Xylene

2.0 Project Description (cont)

2.1 Scope of Services (cont)

<u>Organic Analyses Packages</u>

BTEX: Benzene, Toluene, Ethyl Benzene, Xylene
PNA/PAH: Polynuclear Aromatic Hydrocarbons
601/602, 8010/8020: Halogenated & Aromatic Volatile Organics
TTO: Total Toxic Organics
PCB: Polychlorinated Biphenyl
TCLP: Pesticides
Herbicides
Volatiles
Semivolatiles
8270: Acid Extractables/Base Neutrals
F001-F005: F-Scan

2.2 New Project Authorization

Prior to accepting a new project, the lab director or manager determines if the lab has the facilities and resources necessary to complete the project in accordance with this quality assurance manual. A description and estimate of the work load is provided by the client and assessed accordingly by the authorizing individual.

2.3 Confidentiality Agreement and Proprietary Rights

All employees must sign a confidentiality agreement (figure 1) to protect client and company's confidential information. All analytical reports are kept confidential that only employees of Midwest Analytical Services, Inc. and the client are allowed to view, unless authorized by the client. The reports are faxed and/or mailed directly to the client (see SOP # 215). The file folders, which contain copies of the reports, are stamped "CONFIDENTIAL" and stored in file cabinets in a secured office.

All auditors and visitors that observe the operating procedures of MAS, must also sign a confidentiality agreement (figure 2).

To protect proprietary rights, MAS's equipment list is kept as a supplement to this manual. This supplement will be available contingent upon the approval of the lab director(s).

2.0 Project Description (cont)

2.4 Accommodation and Environment

As a laboratory, Midwest must meet the following conditions:

- Fume hoods, providing proper ventilation, must be available in all rooms where hazardous materials are used.
- Sufficient space must be available to provide an essential and safe work space.
- Test areas must be set up to provide sufficient space for instruments and analysts.
- Lighting must be sufficient.
- The number of electrical outlets must be sufficient to avoid safety hazards.

2.5 Subcontracting Analyses

Any lab Midwest considers as a subcontractor will be required to furnish proof of American Association for Laboratory Accreditation (A2LA) certification or submit to an audit by an officer of MAS's quality assurance department. In the case of an audit, the lab will need to furnish documented procedures that prove compliance with ISO-25 requirements. Otherwise analyses will not be subcontracted to that lab. All documented audits of subcontracting laboratories are kept on file in the quality assurance department.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

Midwest Analytical Services, Inc. is a small corporation which enables quality assurance to be integrated throughout all departments and levels of the laboratory. The MAS organizational chart (Figure 3) outlines the corporate structure of the laboratory. The structure allows constant communication between the quality assurance department and upper management. The quality assurance flow of data chart (figure 4) reflects the organization of the quality assurance program.

The lab directors oversee the activities of the entire laboratory. All major changes or decisions concerning the laboratory must be approved by the lab director(s). The lab directors have authority over all personnel in the lab. The people who report directly to the lab directors are the lab manager, quality assurance coordinator and supervisor, office manager, mobile lab manager, manager of information systems and the organic preparation department. The lab directors are directly responsible for business arrangements, invoice approval, spatial arrangements and laboratory purchases.

3.0 Project Organization and Responsibility (cont)

The lab manager is the technical manager responsible for the supervision of analytical activity in the laboratory, review and validation of analytical data, signing reports, client services and updating laboratory operations. The lab manager must be notified of all changes or problems in analytical methodology. In the absence of the technical manager, all duties are carried out by the quality assurance supervisor.

Each department supervisor is responsible for the supervision of the activities and employees of that department, equipment maintenance, data review and validation, inventory control, method use and performance. The department supervisors report to either the lab director, lab manager.

The quality assurance coordinator is responsible for supervising all quality control in the laboratory and reports to management.

The quality assurance supervisor (manager) is responsible for:

- organizing and maintaining all quality assurance documents (i.e. QAPP, SOP's, etc.)
- supervising intralab and external lab quality control
- reviewing external and intralab data
- performance audits
- lab certification
- reporting to management
- communication with clients
- supervising the quality control department personnel
- reviewing analytical reports and duplicate data
- updating biannual quality reports
- monitoring sampling activities
- purchasing standards used in the laboratory

QA supervisors report to the lab director & or/ manager. In the absence of the quality assurance supervisor (manager), all duties are carried out by the quality assurance coordinator.

Quality assurance technicians are responsible for the following duties for each department:

- preparing and distributing intralab and external lab quality control samples
- compiling intralab and external lab data
- regulating MAS duplicate samples split during log-in
- reviewing and recording duplicate data
- troubleshooting problems in preparatory and analytical methods
- supervision of daily quality control activities in the laboratory
- maintenance of daily quality control charts

QA technicians report to the QA supervisor.

3.0 Project Organization and Responsibility (cont)

The quality assurance department is a central department of MAS. Each analyst must comply with quality assurance by following quality control procedures. Department supervisors must make sure analysts are properly performing all quality control procedures. All analytical data is reviewed by quality assurance to ensure the integrity of the analyses.

Upper management (lab directors, lab manager) also communicates with quality assurance through weekly meetings with quality assurance personnel and the departmental supervisors on a weekly basis to review the quality control data and the functions of the laboratory. Upper management assists with operational problems and proper methodology.

Upper management is also responsible for handling client services (see SOP #113). When a complaint is received, it is logged on a complaint form (figure 5) kept in the client service department. The completed forms are kept in the customer service book located in the client service department. The manager handling the complaint evaluates the problem for possible causes and solutions. When a complaint involves the laboratory's compliance with it's policies, procedures or quality of tests, an audit is performed. The manager then contacts the client as soon as possible and discusses the solution with the client until the complaint has been completely resolved.

The login department, another central department at MAS, is where samples are received and uniquely identified. All sample information is then entered into a computer data base. This department also splits samples for duplicates, generates work orders, ensures turn-around time, types and sends reports to clients and controls sample custody. Login is also responible for making sure all analytical data is approved by quality assurance before being sent to the client.

The business office is responsible for making financial arrangements, invoicing and long-term storage of sample results.

The field services department is responsible for sampling, sample pickup & sample kit requests. Field services personnel must make field duplicates every tenth sample collected. A blank of the wastewater samplers must also be submitted after every sampling batch.

3.1 Job Descriptions

The following are the job descriptions and qualifications necessary for employment at Midwest Analytical Services, Inc.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 0

INITIAL TRAINING:

PERIOD: 0-90 DAYS

PAY: 7.00/HOUR

REVIEWS: 1 PER WEEK

DUTIES: PERFORM SAFETY TESTS , MSDS READING AND FAMILIARIZE YOURSELF WITH MAS POLICIES. READ SOPS ON TESTS BEFORE PERFORMING THEM, THEN PERFORM TEST QC UNTIL YOU PASS. AFTER PASSING QC YOU MAY RUN MAS SAMPLES. LEARN AS MANY TESTS AS YOU CAN. TURN AROUND TIME IS VERY IMPORTANT AFTER YOU LEARN A TEST.

UPDATING SOPS (UTMOST IMPORTANCE)

MUST ACHIEVE 1 CREDIT BY 90 DAYS, FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 1

TITLE: TECHNICIAN

CONTINUED TRAINING: SEMINAR ?

PERIOD: 90 DAYS - 1 YEAR

PAY: 7.00 - 9.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: READ SOPS ON TESTS BEFORE PERFORMING THEM, THEN PERFORM TEST QC UNTIL YOU PASS. AFTER PASSING QC YOU MAY RUN MAS SAMPLES. LEARN AS MANY NEW TESTS AS YOU CAN. HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. LEARN FOLDER AND DATA TRACKING. SHOW LEADERSHIP QUALITIES. TURN AROUND TIME IS IMPORTANT.

UPDATING SOPS (UTMOST IMPORTANCE)

CHECK AND LABEL SAMPLES WHILE SUBMITTING DATA.

MUST ACHIEVE 2 CREDIT BY 1 YEAR , FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 2

TITLE: ADVANCED TECHNICIAN

CONTINUED TRAINING AND RESEARCH

PERIOD: 1-4 YEARS

PAY: 8.00 - 13.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: READ SOPS ON TESTS BEFORE PERFORMING THEM, THEN PERFORM TEST QC UNTIL YOU PASS. AFTER PASSING QC YOU MAY RUN MAS SAMPLES. LEARN AS MANY NEW TESTS AS YOU CAN. HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. LEARN FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED.
TURN AROUND TIME IS IMPORTANT.

UPDATING SOPS (UTMOST IMPORTANCE)

CHECK AND LABEL SAMPLES WHILE SUBMITTING DATA.

MUST ACHIEVE 3 CREDIT BY 2 YEARS, FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 3

TITLE: INORGANIC OR ORGANIC ANALYST

CONTINUED TRAINING AND RESEARCH

PERIOD: 2-7 YEARS

PAY: .10.00 - 14.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: LEARN AS MANY NEW TESTS AS YOU CAN. HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED. PUT IN OVERTIME EFFORT WHEN NEEDED. KNOW ALL OF THE TESTS IN EITHER THE ORGANICS OR INORGANICS DEPARTMENT.
TURN AROUND TIME IS IMPORTANT.

UPDATING SOPS AND KEEP RECORD/PAST VERSIONS (UTMOST IMPORTANCE)

CHECK AND LABEL SAMPLES WHILE SUBMITTING DATA.

MUST ACHIEVE 4 OR 5 CREDITS BY 4 YEARS, FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)

3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 4

TITLE: SENIOR ANALYST

CONTINUED TRAINING AND RESEARCH

PERIOD: 2-7 YEARS

PAY: 11.00 - 15.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED. PUT IN OVERTIME EFFORT WHEN NEEDED. **KNOW ALL OF THE TEST IN THE ORGANICS AND INORGANICS DEPARTMENT.** TURN AROUND TIME IMPORTANT.

UPDATING SOPS AND KEEPING RECORD/PAST VERSIONS (UTMOST IMPORTANCE)

CHECK AND LABEL SAMPLES WHILE SUBMITTING DATA.

THIS IS A VERY UNIQUE CREDIT ACHIEVEMENT, ONLY SOME OUTSTANDING PERSONNEL CAN MAKE IT TO THIS CREDIT ACHIEVEMENT BECAUSE OF THEIR GREAT FLEXIBILITY WITH THE COMPANY.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 5

TITLE: DEPARTMENT LEADER

TRAINING: MANAGEMENT CLASS

PERIOD: 2-7 YEARS

PAY: 22,880 - 35,360 SALARY
HOURS: UP TO 50 HOURS A WEEK MAYBE REQUIRED

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. MUST TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR DEPARTMENTS WORK TO GET THE MOST WORK ACCOMPLISHED. PUT IN OVERTIME EFFORT WHEN NEEDED. **KNOW ALL OF THE TESTS IN YOUR DEPARTMENT.** BE ABLE TO HIRE AND FIRE TECHNICIANS IN YOUR DEPARTMENT. **TURN AROUND TIME AND QUALITY IS YOUR MAIN RESPONSIBILITY.** SOP, MAINTENANCE, DATA AND SAMPLE REVIEW ARE ALSO YOUR RESPONSIBILITIES.

BENCH CHEMISTRY TEST MAY BE REQUIRED.

UPDATING SOPS (UTMOST IMPORTANCE)

CHECK AND LABEL SAMPLES WHILE SUBMITTING DATA.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 6

TITLE: QUALITY ASSURANCE INORGANIC OR ORGANIC

TRAINING: MANAGEMENT CLASS

PERIOD: 3-9 YEARS

PAY: 24,960 - 39,520 SALARY
HOURS: UP TO 50 HOURS A WEEK MAYBE REQUIRED

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING, **MUST SIGN REPORTS** GENERATED FROM YOUR AREA OF EXPERTISE. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. MAY HAVE TO TRAIN NEW PERSONNEL. WILL HAVE FULL RETEST AUTHORITY FOR ANY QUESTIONABLE DATA. PUT IN OVERTIME EFFORT WHEN NEEDED. **KNOW ALL OF THE TESTS IN YOUR DEPARTMENT.** BE ABLE TO HIRE AND FIRE TECHNICIANS IN YOUR DEPARTMENT. **TURN AROUND TIME AND QUALITY IS A MAIN RESPONSIBILITY.** SOP's AND MAKING OF QC SAMPLES FOR YOUR DEPARTMENT AND SOMETIMES OTHER DEPARTMENTS IS REQUIRED. WEEKLY AUDITS OF YOUR DEPARTMENT IS REQUIRED. BIANNUAL GRAPHS AND DAILY QC MEETINGS WITH YOUR SUPERVISOR ARE REQUIRED.

UPDATING SOPS (UTMOST IMPORTANCE)

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 7

TITLE: QUALITY ASSURANCE COORDINATOR

TRAINING: EXTENSIVE REPORT REVIEW
EPA QC SEMINAR

PERIOD: 3-9 YEARS

PAY: 24,960 - 41,600 SALARY
HOURS: UP TO 50 HOURS A WEEK MAYBE REQUIRED

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. MUST BE MASTERFUL AT FOLDER AND DATA TRACKING, MUST SIGN REPORTS AND OR COVER SHEETS GENERATED BY ALL AREAS OF THE LAB. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL. MAY HAVE TO TRAIN NEW PERSONNEL. WILL HAVE FULL RETEST AUTHORITY FOR ANY QUESTIONABLE DATA. MUST PUT IN OVERTIME EFFORT WHEN NEEDED. KNOW ALL OF THE TESTS IN THE LAB. BE ABLE TO HIRE AND FIRE PERSONNEL IN YOUR DEPARTMENT. TURN AROUND TIME AND QUALITY IS A MAIN RESPONSIBILITY. SOP's AND OVERSEEING THE QC DEPARTMENT IS REQUIRED. DAILY QC MEETINGS WITH YOUR DEPARTMENT ARE REQUIRED TO ASSURE THAT WORK IS BEING DONE PROPERLY IN YOUR DEPARTMENT AND THROUGHOUT THE ENTIRE LAB.

UPDATING SOPS (UTMOST IMPORTANCE)

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 8

TITLE: LAB MANAGER

TRAINING: EXTENSIVE REPORT REVIEW
CLIENT EXPOSURE

PERIOD: 3-5 YEARS

PAY: 41,600 - ? SALARY
HOURS: UP TO 60 HOURS A WEEK MAYBE REQUIRED

REVIEWS: 1 PER 4 MONTHS

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. **MUST** BE MASTERFUL AT FOLDER AND DATA TRACKING, MAY SIGN REPORTS GENERATED BY ALL AREAS OF THE LAB. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL.
WILL HAVE FULL RETEST AUTHORITY FOR ANY QUESTIONABLE DATA. MUST PUT IN OVERTIME EFFORT WHEN NEEDED. **KNOW ALL OF THE TESTS IN THE LAB.** BE ABLE TO HIRE AND FIRE PERSONNEL IN LAB **TURN AROUND TIME IS A MAIN RESPONSIBILITY.** DAILY MEETINGS WITH YOUR DEPARTMENT LEADERS AND QC COORDINATOR WILL BE REQUIRED. LEARNING DAY TO DAY FINANCIAL OPERATIONS MAY BE REQUIRED IE.
INVOICING, QUOTES, PAYABLES AND PROFITABILITY.

UPDATING SOPS (UTMOST IMPORTANCE)

CLIENT CONTACT

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

TECHNICAL AREA LAB

CREDIT OBTAINED: 9

TITLE: LAB DIRECTOR

TRAINING: EXECUTIVE CONTROL OF ALL ASPECTS OF THE BUSINESS FINANCE, SALES, CLIENT SERVICE, TECHNICAL AREAS, PERSONNEL QUESTIONS, BUSINESS STRUCTURE AND PHILOSOPHY

PERIOD: 10-15 YEARS

PAY: 41,600 - ? SALARY
HOURS: UP TO 70 HOURS A WEEK MAYBE REQUIRED

REVIEWS: 1 PER 4 MONTHS

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. MUST BE MASTERFUL AT FOLDER AND DATA TRACKING, MAY SIGN REPORTS GENERATED BY ALL AREAS OF THE LAB. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL.
WILL HAVE FULL RETEST AUTHORITY FOR ANY QUESTIONABLE DATA. MUST PUT IN OVERTIME EFFORT WHEN NEEDED. KNOW ALL OF THE TESTS IN THE LAB. BE ABLE TO HIRE AND FIRE PERSONNEL IN LAB TURN AROUND TIME IS A MAIN RESPONSIBILITY. DAILY MEETINGS WITH YOUR DEPARTMENT LEADERS AND QC COORDINATOR WILL BE REQUIRED. LEARNING DAY TO DAY FINANCIAL OPERATIONS MAY BE REQUIRED IE.
INVOICING, QUOTES, PAYABLES AND PROFITABILITY.

UPDATING SOPS (UTMOST IMPORTANCE)

CLIENT CONTACT, SALES AND NEGOTIATE CONTRACTS AND FINANCIAL NEEDS

3.0 Project Organization and Responsibility (cont)

3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

CLIENT SERVICE AREA

CREDIT OBTAINED: 0

INITIAL TRAINING:

PERIOD: 0-90 DAYS

PAY: 7.00/HOUR

REVIEWS: 1 PER WEEK OR MONTHLY

DUTIES: MUST PASS THE SAFETY TEST AND WATCH THE SAFETY VIDEO TYPING REPORTS, FAXING, MAILING, ANSWERING PHONES, SCHEDULING APPOINTMENTS, LOGIN, SAMPLE DISCREPANCY SHEETS, COPY AND SEND, INVOICING AND REPORTS AND HANDLING SIMPLE CLIENT REQUESTS SUCH AS WHAT'S THE STATUS OF THIS OR FAX ME THAT. YOU MUST START TO DEVELOP THINKING AND PROBLEM SOLVING SKILLS IN A DEFINED MANNER.

UPDATING SOPS (UTMOST IMPORTANCE)

MUST ACHIEVE 1 CREDIT BY 90 DAYS, FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

CLIENT SERVICE AREA LAB

CREDIT OBTAINED: 1

TITLE: CLIENT SERVICE REPRESENTATIVE

CONTINUED TRAINING: SEMINAR ?

PERIOD: 90 DAYS - 1 YEAR

PAY: 7.00 - 8.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES:

YOU MUST EXCEL AT THE FOLLOWING TASKS WITHOUT ASSISTANCE: TYPING REPORTS, FAXING, MAILING, ANSWERING PHONES, SCHEDULING APPOINTMENTS, LOGIN, SAMPLE DISCREPANCY SHEETS, COPY AND SEND, INVOICING AND REPORTS.
YOU MUST BE ABLE TO RECOGNIZE CLIENTS BY NAME AND COMPANY AND BE ABLE TO ASSIST THEM AT A MORE INTRICATE LEVEL WHICH INCLUDES KNOWING WHAT PROJECTS ARE OPEN FOR THEM AND WHAT THE STATUS OF THOSE MIGHT BE. ALSO HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. LEARN FOLDER AND DATA TRACKING. SHOW LEADERSHIP QUALITIES. TURN AROUND TIME IS IMPORTANT. YOU MUST BE ABLE TO THINK AND PROBLEM SOLVE FOR THE CLIENT. THIS WILL HELP DEFINE THEIR NEEDS AND THEREFORE OUR ACTIONS.

UPDATING SOPS (UTMOST IMPORTANCE)

MUST ACHIEVE 2 CREDIT BY 1 YEAR , FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

CLIENT SERVICE AREA

CREDIT OBTAINED: 2

TITLE: ADVANCED CLIENT SERVICE REPRESENTATIVE

CONTINUED TRAINING AND RESEARCH

PERIOD: 1-4 YEARS

PAY: 8.00 - 13.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: YOU MUST HAVE EXPERT KNOWLEDGE OF ALL DUTIES LISTED IN CREDIT ONE. HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. LEARN FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED. YOU MUST REALIZE THAT TURN AROUND TIME IS IMPORTANT TO THE CLIENT. YOU MUST BE ABLE TO EXTRACT THE INFORMATION OR QUESTION THAT THE CLIENT HAS THIS IS VERY IMPORTANT IN DETERMINING IF WE CAN EVEN HELP THEM OR NOT. AN EXAMPLE WOULD BE WHAT IS THE SAMPLE ORIGIN FOR LOGIN THIS IS CRITICAL TO EVERYTHING FROM LOGIN TO INVOICING

UPDATING SOPS (UTMOST IMPORTANCE)

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

CLIENT SERVICE AREA

CREDIT OBTAINED: 3

TITLE: DEPARTMENT LEADER

CONTINUED TRAINING AND RESEARCH

PERIOD: 2-7 YEARS

PAY: 10.00-14.00/HR

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS.
SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED. PUT IN OVERTIME EFFORT WHEN NEEDED. YOU MUST REALIZE THAT TURN AROUND TIME IS IMPORTANT TO THE CLIENT. BE ABLE TO GIVE LABORATORY TOURS AND GIVE QUOTES IF APPROVED BY LAB MANAGER.

UPDATING SOPS AND KEEP RECORD/PAST VERSIONS (UTMOST IMPORTANCE)

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

CLIENT SERVICE AREA

CREDIT OBTAINED: 4

TITLE: CLIENT SERVICE MANAGER

CONTINUED TRAINING AND RESEARCH

PERIOD: 2-7 YEARS

PAY: 11.00 - 15.00 /HOUR

REVIEWS: 1 PER MONTH

DUTIES: HELP IN IMPROVING MAS DAY TO DAY OPERATIONS BY PROVIDING NEW IDEAS. SHOULD BE MASTERFUL AT FOLDER AND DATA TRACKING. BE ABLE TO TAKE ON ANY RESEARCH OR NEW PROJECT WITHOUT SUPERVISION. BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT. HAVE THE ABILITY TO TRAIN NEW PERSONNEL. BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED. PUT IN OVERTIME EFFORT WHEN NEEDED. **YOU MUST KNOW ENOUGH ABOUT THE ORGANICS AND INORGANICS DEPARTMENT TO GIVE AN 'IN DEPTH' TOUR AND DISCUSS THE TECHNICAL ADVANTAGES OF OUR SYSTEM AND EQUIPMENT.** YOU ALSO MUST BE ABLE TO THINK ABOUT WHAT OTHER WORK WE COULD BE DOING FOR A PARTICULAR CLIENT IN CONJUNCTION WITH THE CURRENT PROJECT. YOU ALSO MUST BE ABLE TO EXTRACT INFORMATION FROM THE CLIENT IN A VERY SOPHISTICATED MANNER. THIS PERSON SHOULD HAVE THE ABILITY TO SUGGEST AND TAKE ACTION THAT WILL RESULT IN QUICKER TURN AROUND TIME LOWER COST AND HIGHER QUALITY AND A MORE PROPERLY SERVED CLIENT. A WORKING KNOWLEDGE LABORATORY PROFITS AND COSTS FOR LABOR AND MATERIALS WILL ENABLE THIS PERSON TO MAKE BETTER JUDGEMENTS REGARDING QUOTATIONS AND DISCOUNTING. ALSO KNOWLEDGE OF PAYMENT HISTORY IS CRITICAL.

UPDATING SOPS AND KEEPING RECORD/PAST VERSIONS (UTMOST IMPORTANCE)

THIS IS A VERY UNIQUE CREDIT ACHIEVEMENT, ONLY SOME OUTSTANDING PERSONNEL CAN MAKE IT TO THIS CREDIT ACHIEVEMENT BECAUSE OF THEIR GREAT FLEXIBILITY WITH THE COMPANY.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

FIELD SERVICE AREA

CREDIT OBTAINED: 0

INITIAL TRAINING:

PERIOD: 0-90 DAYS

PAY: 7.00/HOUR

REVIEWS: 1 PER WEEK

JOB DESCRIPTION: FAMILIARIZE YOURSELF WITH MIDWEST SAFETY PROCEDURES, LEARN ABOUT SAMPLE PICKUPS, HOW TO MAKE SAMPLING KITS, SCHEDULE A JOB, MAKE A NEW CLIENT FILE, UPDATE AN EXISTING CLIENT FILE
UPDATING SOPS (UTMOST IMPORTANCE)

MUST ACHIEVE 1 CREDIT BY 90 DAYS, FAILURE TO DO SO MAY SHOW INADEQUATE CAPABILITIES.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS
FIELD SERVICE AREA
CREDIT OBTAINED: 0

INITIAL TRAINING: FORTY HOUR TRAINING OSHA APPROVED
PERIOD: 0-90 DAYS
PAY: 7.00/HOUR
REVIEWS: 1 PER WEEK

JOB DESCRIPTION:
* YOU NEED TO READ THE MIDWEST BY-LAWS AND UNDERSTAND THE RULES, PROCEDURES, AND DISCIPLINE SYSTEM; * FAMILIARIZE YOURSELF WITH MIDWEST SAFETY PROCEDURES AND PASS SAFETY TEST, INCLUDING CONFINED SPACE ENTRY SITUATIONS;
* HOW TO MAKE SAMPLING KITS;
* SCHEDULE A JOB & LEARN ABOUT SAMPLE PICKUPS;
* MAKE A NEW CLIENT FILE,& UPDATE AN EXISTING CLIENT FILE; * CLEAN ALL & ANY FIELD SERVICE EQUIPMENT;
* USE RADIO AND PHONE SYSTEM;
* MAINTAIN VEHICLES & MAINTAIN A CLEAN DRIVING RECORD;
* CLEAN FIELD SERVICE AREA DAILY;
* RECEIVE STOCK;
* FILL OUT CHAIN OF CUSTODY & LOGIN SAMPLES;
* PREPARE TRADE SHOW DOCUMENTS;
* READ & UNDERSTAND SOP'S;
* COMPOSITE AND GRAB SAMPLES, HOLDING TIMES, BOTTLE TYPES AND PRESERVATION REQUIREMENTS;
* LEARN HOW TO PACKAGE SAMPLES & UPS PACKAGES;
* UNDERSTAND WHAT TURNAROUND TIME IS, A RUSH, NORMAL AND WHY ITS IMPORTANT TO OUR CLIENTS;
* UNDERSTAND WHAT QUALITY CONTROL IS AND WHAT ITS FOR;
* YOU MAKE THE INITIAL CLIENT CONTACT FOR MAS, THEREFORE YOUR APPEARANCE, MANNERISM'S, CONDUCT AND ATTITUDE ARE CRITICAL. WE WORK AT OUR CLIENTS REQUEST NOT OUR OWN.
* YOU MUST BE TEACHABLE, ie BE ABLE TO LEARN A NEW WAY OF DOING TASKS AND BE ABLE TO FOLLOW DIRECTIONS.
* MOST IMPORTANTLY YOU NEED TO BEGIN THE NEVER ENDING PROCESS CALLED THINKING AND PROBLEM SOLVING.
* IN FIELD SERVICE HUSTLING IS VERY CRITICAL BECAUSE THE SITUATIONS ARE ALWAYS CHANGING AND YOU CAN GO FROM SLOW TO SWAMPED IN A MANNER OF MINUTES.

IT IS EXTREMELY IMPORTANT THAT THE FIELD TECH'S COMMUNICATE THE DETAILS OF EVERY JOB TO THE FIELD SERVICE DEPT LEADER. THE DEPT LEADER MAY HAVE MORE BACKGROUND REGARDING A PARTICULAR SITUATION WHICH WILL ALLOW A POTENTIALLY DIFFICULT SITUATION TO BE RESOLVED SMOOTHLY. BUT IF THE DEPARTMENT LEADER IS NOT INFORMED THEN THE PROPER SOLUTION MAY NOT BE ACHIEVED AND A SMALL MISTAKE COULD BECOME LARGER AND LEAD TO THE LOSS OF A CLIENT AND MORE IMPORTANTLY DAMAGE MIDWESTS' REPUTATION IN THE MARKET PLACE.

*** YOUR GOAL MUST BE TO LEARN ALL THE ABOVE LISTED ITEMS FOR THE PURPOSE OF BECOMING COMPETENT ENOUGH TO ACHIEVE YOUR FIRST CREDIT BY THE END OF 90 DAYS.

4.0 Data Quality Objectives (cont)

Parameter	Machine #	Method	Units	Precision	Accuracy
Organics					
Acid Extractables/Base Neutrals					
cresol		ref 2, 625	mg/l	0.0124	-0.4711
pentachlorophenol		ref 2, 625	mg/l	0.0366	0.0073
2,4,5-trichlorophenol		ref 2, 625	mg/l	0.0046	-0.0743
2,4,6-trichlorophenol		ref 2, 625	mg/l	0.0071	-0.0127
Base neutral compounds					
acenaphthene	169HP	ref 1, 8270	mg/l	0.0183	-0.6329
	189SAT	ref 1, 8270	mg/l	0.0033	-0.1143
	187ITS40	ref 1, 8270	mg/l	0.0044	-0.1876
acenaphthylene	169HP	ref 1, 8270	mg/l	0.0212	-0.8329
	189SAT	ref 1, 8270	mg/l	0.0062	-0.1126
	187ITS40	ref 1, 8270	mg/l	0.0032	-0.1944
anthracene	169HP	ref 1, 8270	mg/l	0.0255	-0.3271
	189SAT	ref 1, 8270	mg/l	0.0164	-0.0250
	187ITS40	ref 1, 8270	mg/l	0.0130	-0.0756
benzo(a)anthracene	169HP	ref 1, 8270	mg/l	0.0414	-0.1943
	189SAT	ref 1, 8270	mg/l	0.0210	-0.0190
	187ITS40	ref 1, 8270	mg/l	0.1255	0.0104
benzo(a)pyrene	169HP	ref 1, 8270	mg/l	0.0366	-0.6057
	189SAT	ref 1, 8270	mg/l	0.0088	-0.0893
	187ITS40	ref 1, 8270	mg/l	0.0374	-0.0637
benzo(b)fluoranthene	169HP	ref 1, 8270	mg/l	0.0327	-0.4986
	189SAT	ref 1, 8270	mg/l	0.0047	-0.1244
	187ITS40	ref 1, 8270	mg/l	0.0059	0.0510
benzo(ghi)perylene	169HP	ref 1, 8270	mg/l	0.1963	-1.2143
	189SAT	ref 1, 8270	mg/l	0.0040	-0.1347
	187ITS40	ref 1, 8270	mg/l	0.0529	-0.1574
benzo(k)fluoranthene	169HP	ref 1, 8270	mg/l	0.0285	-0.6786
	189SAT	ref 1, 8270	mg/l	0.0050	-0.1274
	187ITS40	ref 1, 8270	mg/l	0.0470	-0.0069
chrysene	169HP	ref 1, 8270	mg/l	0.0769	-0.1571
	189SAT	ref 1, 8270	mg/l	0.3040	0.0864
	187ITS40	ref 1, 8270	mg/l	0.1102	-0.0109
dibenzo(a,h)anthracene	169HP	ref 1, 8270	mg/l	0.0139	-1.3771
	189SAT	ref 1, 8270	mg/l	0.0064	-0.1300
	187ITS40	ref 1, 8270	mg/l	0.0310	-0.1693
1,4-dichlorobenzene		ref 1, 8270	mg/l	0.0108	-0.1007
2,4-dinitrotoluene		ref 1, 8270	mg/l	0.0139	-0.0036
fluoranthene	169HP	ref 1, 8270	mg/l	0.0427	0.3529
	189SAT	ref 1, 8270	mg/l	0.0166	0.0080
	187ITS40	ref 1, 8270	mg/l	0.0148	-0.0201
fluorene	169HP	ref 1, 8270	mg/l	0.0594	-0.3714
	189SAT	ref 1, 8270	mg/l	0.0049	-0.0941
	187ITS40	ref 1, 8270	mg/l	0.0028	-0.1559
hexachlorobenzene		ref 1, 8270	mg/l	0.0165	-0.1040
hexachlorobutadiene		ref 1, 8270	mg/l	0.0051	-0.0947
hexachloroethane		ref 1, 8270	mg/l	0.0037	-0.1424
indeno(1,2,3-cd)pyrene	169HP	ref 1, 8270	mg/l	0.1539	-1.3829
	189SAT	ref 1, 8270	mg/l	0.0197	-0.1176
	187ITS40	ref 1, 8270	mg/l	0.0336	-0.1399

4.0 Data Quality Objectives (cont)

Parameter	Method	Units	Precision	Accuracy
N as Nitrate	ref 6, D81-0025	mg/l	0.14	0.26
N as Nitrite	ref 2, 354.1	mg/l	0.0006	-0.0041
Orthophosphate	ref 2, 365.2	mg/l		
Oxidation Screen	ref 3, D4981	---		
Paint Filter Test	ref 1, 9045	---		
pH	ref 1, 9040	units		
	ref 1, 9045	units		
	ref 2, 150.1	units		
Phenol	ref 2, 420.2	mg/l	0.0061	-0.000.
Percent Ash	ref 2, 160.4	%		
Percent Solids	ref 2, 160.3	%		
Radiation Screen	ref 3, D3648	---		
Sulfate	ref 2, 200.7	mg/l		
Sulfide, Total	ref 1, 9030	mg/l	3.75	1.07
	ref 2, 376.1	mg/l		
Sulfide, Reactive	ref 1, 7.3.4	mg/l		
Temperature	ref 2, 170.1	°F|°C		
Total Kjeldahl Nitrogen	ref 2, 351.3	mg/l		
Total Halogens	ref 1, 9020	mg/l		
Total Organic	ref 1, 9060	mg/l		
Carbon	ref 2, 415.1	mg/l		
Total Organic Halogens	ref 1, 9020	mg/l		
Total Dissolved Solids	ref 2, 160.1	mg/l		
Total Solids	ref 2, 160.3	%		
Total Suspended Solids	ref 2, 160.2	mg/l		
Total Petroleum Hydrocarbons	ref 2, 418.1	mg/l		
Total Phenolics	ref 2, 420.1	mg/l		
Turbidity	ref 2, 180.1	ntu		
Viscosity	ref 3, D2196	cps		
Water Mix Screen	ref 3, D5058	---		

4.0 Data Quality Objectives (cont)

Parameter	Method	Units	Precision	Accuracy
Yttrium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Zinc	ref 1, 6010	mg/l	0.0016	-0.016
	ref 2, 200.7	mg/l	0.0016	-0.016
	ref 1, 7950	mg/l		
	ref 2, 289.1	mg/l		
	ref 1, 7951	mg/l.		
	ref 2, 289.2	mg/l		
Zirconium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Wet Chemistry				
Acidity	ref 4, 2310	mg/l		
Alkalinity	ref 4, 2320	mg/l	1.38	-3.07
Bottom Sediment and Water	ref 3, D96	%		
Bicarbonate	ref 3, D513	mg/l		
Biochemical Oxygen Demand	ref 2, 405.1	mg/l	0.43	0.103
Bromide	ref 3, D1246	mg/l	0.0045	-0.0029
BTU/lb	ref 3, D240	btu/lb		
Chemical Oxygen Demand	ref 2, 410.4	mg/l	20.74	16.57
Chloride	ref 3, D512	mg/l	0.018	-0.027
Color	ref 2, 110.3	---		
Conductivity	ref 2, 120.1	µs/cm|µmho/cm		
Cyanide, Total	ref 1, 9010	mg/l	0.35	-0.88
	ref 2, 335.2	µg/L	0.013	-0.0057
	ref 2, 335.3	µg/L	0.12	-0.19
Cyanide, Free	ref 4. 4500-CN-I	mg/l		
Cyanide, Reactive	ref 1, 7.3.3.2	mg/l		
Cyanide, Amenable	ref 2, 335.1	mg/l		
Density	ref 3, D5057	g/ml		
	ref 3, D287	g/cc		
Dissolved Oxygen	ref 2, 360.1	mg/l		
Fats, Oil & Grease	ref 2, 413.2	mg/l	0.505	-2.51
Flashpoint	ref 1, 1010	°F		
Fluoride	ref 2, 340.2	mg/l	0.014	0.0086
Hardness	ref 4, 2340B	mg/l		
Iodide	ref 3, D1246	mg/l	0.064	0.014
Methylene Blue Active Substances	ref 4, 5540	mg/l		
N as Ammonia	ref 2, 350.3	mg/l	0.0053	-0.01

4.0 Data Quality Objectives (cont)

Parameter	Method	Units	Precision	Accuracy
Scandium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Selenium	ref 1, 6010	mg/l	0.0146	0.0286
	ref 2, 200.7	mg/l	0.0146	0.0286
	ref 1, 7740	mg/l		
	ref 2, 270.2	mg/l		
	ref 1, 7741	mg/l		
	ref 2, 270.3	mg/l		
Silicon	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Silver	ref 1, 6010	mg/l	0.0033	-0.0057
	ref 2, 200.7	mg/l	0.0033	-0.0057
	ref 1, 7760	mg/l		
	ref 2, 272.1	mg/l		
	ref 1, 7761	mg/l	0.00004	0.0017
	ref 2, 272.2	mg/l	0.00004	0.0017
Sodium	ref 1, 6010	mg/l	0.004	0.0126
	ref 2, 200.7	mg/l	0.004	0.0126
	ref 1, 7770	mg/l		
	ref 2, 273.1	mg/l		
Sulfur	ref 1, 6010	mg/l	0.0233	0.206
	ref 2, 200.7	mg/l	0.0233	0.206
Strontium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Tantalum	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Tellurium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Thallium	ref 1, 6010	mg/l	0.0069	-0.0324
	ref 2, 200.7	mg/l	0.0069	-0.0324
	ref 1, 7840	mg/l	0.0356	-0.0869
	ref 2, 279.1	mg/l	0.0356	-0.0869
	ref 1, 7841	mg/l		
	ref 2, 279.2	mg/l		
Tin	ref 1, 6010	mg/l	0.0011	0.0036
	ref 2, 200.7	mg/l	0.0011	0.0036
Titanium	ref 1, 6010	mg/l	0.00035	-0.00014
	ref 2, 200.7	mg/l	0.00035	-0.00014
Tungsten	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Vanadium	ref 1, 6010	mg/l	0.0017	0.0014
	ref 2, 200.7	mg/l	0.0017	0.0014

4.0 Data Quality Objectives (cont)

Parameter	Method	Units	Precision	Accuracy
Lithium	ref 1, 6010	mg/l	0.0007	0.0017
	ref 2, 200.7	mg/l	0.0007	0.0017
Magnesium	ref 1, 6010	mg/l	0.0012	-0.0137
	ref 2, 200.7	mg/l	0.0012	-0.0137
Manganese	ref 1, 6010	mg/l	0.0009	0.0013
	ref 2, 200.7	mg/l	0.0009	0.0013
	ref 1, 7460	mg/l		
	ref 2, 243.1	mg/l		
Mercury	ref 1, 7470	mg/l	0.00002	0.00024
	ref 1, 7471	mg/l	0.00002	0.00024
	ref 2, 245.2	mg/l	0.00002	0.00024
Molybdenum	ref 1, 6010	mg/l	0.0131	-0.0143
	ref 2, 200.7	mg/l	0.0131	-0.0143
	ref 1, 7480	mg/l		
	ref 2, 246.1	mg/l		
Nickel	ref 1, 6010	mg/l	0.0057	-0.0216
	ref 2, 200.7	mg/l	0.0057	-0.0216
	ref 1, 7520	mg/l		
	ref 2, 249.1	mg/l		
	ref 2, 249.2	mg/l		
Niobium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Osmium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Palladium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Phosphorus	ref 1, 6010	mg/l	0.0049	-0.00057
	ref 2, 200.7	mg/l	0.0049	-0.00057
Platinum	ref 1, 6010	mg/l	0.0113	-0.0189
	ref 2, 200.7	mg/l	0.0113	-0.0189
Potassium	ref 1, 6010	mg/l	0.0066	0.0161
	ref 2, 200.7	mg/l	0.0066	0.0161
	ref 1, 7610	mg/l		
	ref 2, 258.1	mg/l		
Rhenium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Rhodium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Rubidium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Ruthenium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		

4.0 Data Quality Objectives (cont)

Parameter	Method	Units	Precision	Accuracy
Chromium, Total	ref 1, 6010	mg/l	0.0029	0.0053
	ref 2, 200.7	mg/l	0.0029	0.0053
	ref 1, 7190	mg/l		
	ref 2, 218.1	mg/l		
	ref 1, 7191	mg/l		
	ref 2, 218.2	mg/l		
Chromium, Hex	ref 1, 7196	mg/l		
Cobalt	ref 1, 6010	mg/l	0.0018	0.0041
	ref 2, 200.7	mg/l	0.0018	0.0041
	ref 1, 7200	mg/l		
	ref 2, 219.1	mg/l		
Copper	ref 1, 6010	mg/l	0.0023	0.0147
	ref 2, 200.7	mg/l	0.0023	0.0147
	ref 1, 7210	mg/l		
	ref 2, 220.1	mg/l		
	ref 1, 7221	mg/l		
	ref 2, 220.2	mg/l		
Gallium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Germanium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Gold	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Hafnium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Indium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Iridium	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Iron	ref 1, 6010	mg/l	0.0031	0.0041
	ref 2, 200.7	mg/l	0.0031	0.0041
	ref 1, 7380	mg/l		
	ref 2, 236.1	mg/l		
	ref 1, 7381	mg/l		
	ref 2, 236.2	mg/l		
Lanthanum	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Lead	ref 1, 6010	mg/l	0.0071	0.032
	ref 2, 200.7	mg/l	0.0071	0.032
	ref 1, 7420	mg/l	0.0098	0.029
	ref 2, 239.1	mg/l	0.0098	0.029
	ref 1, 7421	mg/l	0.00016	0.0012
	ref 2, 239.2	mg/l	0.00016	0.0012

4.0 DATA QUALITY OBJECTIVES

Data quality objectives are listed only for analyses performed on a routine basis in the laboratory.

Parameter	Method	Units	Precision	Accuracy
Metals				
Aluminum	ref 1, 6010	mg/l	0.0022	-0.00086
	ref 2, 200.7	mg/l	0.0022	-0.00086
	ref 1, 7020	mg/l		
	ref 2, 202.1	mg/l		
Antimony	ref 1, 6010	mg/l	0.021	0.028
	ref 2, 200.7	mg/l	0.021	0.028
	ref 1, 7040	mg/l		
	ref 2, 204.1	mg/l		
Arsenic	ref 1, 6010	mg/l	0.015	0.02
	ref 2, 200.7	mg/l	0.015	0.02
	ref 1, 7060	mg/l		
	ref 2, 206.2	mg/l		
	ref 1, 7061	mg/l		
	ref 2, 206.3	mg/l		
Barium	ref 1, 6010	mg/l	0.00035	0.00014
	ref 2, 200.7	mg/l	0.00035	0.00014
	ref 1, 7080	mg/l		
	ref 2, 208.1	mg/l		
	ref 1, 7081	mg/l		
	ref 2, 208.2	mg/l		
Beryllium	ref 1, 6010	mg/l	0.000099	0.00019
	ref 2, 200.7	mg/l	0.000099	0.00019
	ref 1, 7090	mg/l		
	ref 2, 210.1	mg/l		
	ref 1, 7091	mg/l		
	ref 2, 210.2	mg/l		
Bismuth	ref 1, 6010	mg/l		
	ref 2, 200.7	mg/l		
Boron	ref 1, 6010	mg/l	0.0039	0.0294
	ref 2, 200.7	mg/l	0.0039	0.0294
Cadmium	ref 1, 6010	mg/l	0.00083	0.0041
	ref 2, 200.7	mg/l	0.00083	0.0041
	ref 1, 7130	mg/l	0.00073	-0.0035
	ref 2, 213.1	mg/l	0.00073	-0.0035
	ref 1, 7131	mg/l		
	ref 2, 213.2	mg/l		
Calcium	ref 1, 6010	mg/l	0.0017	-0.0056
	ref 2, 200.7	mg/l	0.0017	-0.0056
	ref 1, 7140	mg/l		
	ref 2, 215.1	mg/l		

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS
FIELD SERVICE AREA
CREDIT OBTAINED: 3

TITLE: FIELD SERVICE DEPARTMENT LEADER

CONTINUED TRAINING AND RESEARCH

PERIOD: 2-7 YEARS
PAY: 10.00 - 14.00 /HOUR
REVIEWS: 1 PER MONTH

JOB DESCRIPTION:
* YOU MUST POSSES A WORKING KNOWLEDGE OF ALL OPERATIONS AND DUTIES IN THE FIELD SERVICE AREA. WHICH OF COURSE INCLUDES ANYTHING LISTED IN CREDITS 0-2 AND ANY OTHER TASKS THAT MIGHT BE NECESSARY;
* FAMILIAR WITH CFR's AND REGULATIONS FOR AIR SAMPLING, WASTEWATER, STORM WATER AND RCRA;
* FAMILIAR WITH MDNR REGULATIONS FOR GROUNDWATER;
* DOCUMENTATION IS GOING TO BE IMPORTANT. BE SURE TO FINISH ALL TASKS WITH THE APPROPRIATE PAPERWORK;
* IT IS CRITICAL TO GET TO KNOW THE SKILLS AND PERSONALITIES OF EACH OF YOUR TEAM MEMBERS TO MAKE SURE THE RIGHT TYPE OF PERSON IS DOING THE PROPER TASK;
* CLIENT SCHEDULING FOR SAMPLING.
* SALES

YOU ALSO MUST HAVE THE ABILITY TO CREATE AN ENVIRONMENT WHERE YOUR TECHNICIANS WILL WANT TO WORK HARD AND ACHIEVE THE DESIRED RESULTS WITHOUT RESORTING TO THREATS.

THIS IS DONE BY CLEARLY DEFINING TASKS AND HAVING THE ABILITY TO FOLLOW UP AND JUDGE THEIR RESULTS. THIS WILL BE IMPORTANT WHEN YOU WILL NEED TO REVIEW THE PERFORMANCE AND GIVE RECOMMENDATIONS FOR PROMOTIONS, RAISES, FIRING, DEMOTIONS.

IT IS EXTREMELY IMPORTANT THAT A CONSTANT UPDATE ABOUT THE LEVEL OF CLIENT SATISFACTION IS FUNNELLED TO THE CLIENT SERVICE LEADER AND THE LAB MANAGER. HAPPY OR UNHAPPY WE NEED TO KNOW SO THAT WE CAN PLAN OUR ACTIONS ACCORDINGLY.
YOU MUST FULLY UNDERSTAND HOW AND WHY THIS IS OF UTMOST IMPORTANCE!!
THE MANAGERS HAVE MANY WAYS OF DEALING WITH SITUATIONS THAT YOU MIGHT SEE AS IMPOSSIBLE THAT THEY HAVE DEALT WITH BEFORE.

ALSO YOU MUST BE ABLE TO GET THE DEPARTMENT RUNNING IN SUCH A WAY BE IT PERSONNEL OR EQUIPMENT THAT YOU HAVE THE TIME TO DEVELOP AND IMPLEMENT A SALES PLAN WHICH WILL ASSURE MIDWEST THAT WE ARE DOING ALL THE WORK THAT WE POSSIBLY CAN FOR OUR EXISTING CLIENTS AND WHO MIGHT BE SOME LOGICAL COMPANIES TO GO AFTER. THIS WILL BE VERY IMPORTANT.

3.0 Project Organization and Responsibility (cont)
3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

FIELD SERVICE AREA

CREDIT OBTAINED: 2

TITLE: ADVANCED FIELD SERVICE TECHNICIAN

CONTINUED TRAINING AND RESEARCH

PERIOD: 1-4 YEARS

PAY: 8.00 - 13.00 /HOUR

REVIEWS: 1 PER MONTH

JOB DESCRIPTION:

* YOU MUST COMPLETELY BE ABLE TO PERFORM ANY OF THE CREDIT ONE DUTIES WITHOUT HESITATION.
* FAMILIAR WITH 40 CFR 403, 413, 433 PRETREATMENT REGULATIONS
* SHOULD BE ABLE TO SAMPLE ANY SITUATION WITH ANY EQUIPMENT AND KNOW THE REQUIRED PAPER WORK INCLUDING THE COC
* FAMILIAR WITH DWSD PERMIT SYSTEM & REQUIRED ANALYSIS
* YOU SHOULD BE ABLE TO REPAIR MOST TYPES OF EQUIPMENT.
* YOU SHOULD BE ABLE TO ORDER EQUIPMENT AND SUPPLIES AND MAKE PO'S. YOU SHOULD BE AWARE OF THE FINANCIAL IMPACT OF DOING SUCH A THING.

* YOU SHOULD BE ABLE TO RESEARCH A NEW PROJECT WITHOUT SUPERVISION.

* BE A LEADER FOR OTHER LESS EXPERIENCED PERSONNEL IN YOUR DEPT.

* HAVE THE ABILITY TO TRAIN NEW PERSONNEL.

* BE ABLE TO PRIORITIZE YOUR WORK TO GET THE MOST WORK ACCOMPLISHED ON YOUR OWN.

* IT IS VERY IMPORTANT TO COMMUNICATE AND TO PRACTICE WHAT YOU HAVE LEARNED.

YOU HAVE TO MAKE A DIFFERENCE, YOU SHOULD NOT BE SATISFIED WITH THE STATUS QUO, YOUR MIND MUST BE OPEN AND OPERATIONAL!

3.0 Project Organization and Responsibility (cont)

3.1 Job Descriptions (cont)

MAS ACHIEVEMENT AND EXPERIENCE CREDITS

FIELD SERVICE AREA

CREDIT OBTAINED: 1

TITLE: FIELD SERVICE TECHNICIAN

CONTINUED TRAINING: SEMINAR ?

PERIOD: 90 DAYS - 1 YEAR

PAY: 7.00 - 9.00 /HOUR

REVIEWS: 1 PER MONTH

JOB DESCRIPTION:

* YOU MUST COMPLETELY BE ABLE TO PERFORM ANY OF THE CREDIT ZERO DUTIES WITHOUT HESITATION.
* FAMILIAR WITH 40 CFR 136.3(e) SAMPLE HOLDING TIMES AND 40 CFR 403 APP.E SAMPLING PROCEDURES
* FAMILIAR WITH DWSD PERMIT SYSTEM
* SHOULD BE ABLE TO HANDLE THE SAMPLING EQUIPMENT AND PAPER WORK INCLUDING THE COC FOR SAMPLING WASTEWATER, STORM WATER GROUND WATER, AIR, DRUMS, PITS, AND TANKS
* FAMILIAR WITH ALL COC AND HOW TO FILL THEM OUT

* YOU MUST SHOW LEADERSHIP QUALITIES.

* YOU MUST BE ABLE TO BUILD A RAPPORT WITH THE CLIENTS IN SUCH A WAY THAT THEY WILL FEEL THAT THEY CAN NOT BE SERVICED AS WELL WITH ANOTHER COMPANY. YOU MUST PRESENT YOURSELF IN SUCH A WAY THAT THEY TRULY TRUST YOUR JUDGEMENT AND VALUE YOUR OPINION.

* YOU MUST HAVE THE ABILITY TO PROVIDE NEW IDEAS THAT WILL MAKE MIDWEST MORE EFFICIENT AND PROFITABLE.

YOUR GOAL MUST BE TO LEARN ALL THE ABOVE LISTED ITEMS FOR THE PURPOSE OF BECOMING A REAL CONTRIBUTING MEMBER OF THE MIDWEST TEAM AND COMPETENT ENOUGH TO ACHIEVE YOUR SECOND CREDIT WITHIN ONE YEAR.

4.0 Data Quality Objectives (cont)

Parameter	Machine #	Method	Units	Precision	Accuracy
Base neutral compounds (cont)					
naphthalene	169HP	ref 1, 8270	mg/l	0.0315	-1.0029
	189SAT	ref 1, 8270	mg/l	0.0014	-0.1434
	187ITS40	ref 1, 8270	mg/l	0.0044	-0.2037
nitrobenzene		ref 1, 8270	mg/l	0.0061	-0.0181
phenanthrene	169HP	ref 1, 8270	mg/l	0.0237	-0.1129
	189SAT	ref 1, 8270	mg/l	0.0044	-0.0411
	187ITS40	ref 1, 8270	mg/l	0.0088	-0.0663
pyrene	169HP	ref 1, 8270	mg/l	0.0261	0.3557
	189SAT	ref 1, 8270	mg/l	0.0250	-0.0173
	187ITS40	ref 1, 8270	mg/l	0.0062	-0.1001
pyridine		ref 1, 8270	mg/l	0.0291	-0.1821
Pesticides & polychlorinated biphenyls					
chlordane		ref 1, 8270	mg/l	0.0286	0.0457
toxaphene		ref 1, 8270	mg/l	0.0445	-0.1713
PCB arochlor 1254		ref 1, 8270	mg/l	0.0111	-0.1907
Volatile compounds					
benzene	135/3400	ref 2, 602	µg/l	0.1852	-1.5800
	136/5890	ref 2, 602	µg/l	0.1813	0.0926
	153/3700	ref 2, 602	µg/l	0.8614	-0.1793
	154/3400	ref 2, 602	µg/l	0.1019	-0.1064
	163HP	ref 1, 8260	µg/l	0.0904	-0.1571
	321ITS40	ref 1, 8260	µg/l	0.1488	-0.1709
bromobenzene	163HP	ref 1, 8260	µg/l	0.1841	-0.1429
	321ITS40	ref 1, 8260	µg/l	0.1502	-0.2241
bromodichloromethane	154/3400	ref 2, 601	µg/l	0.1685	0.2739
	163HP	ref 1, 8260	µg/l	0.0926	-0.1000
	321ITS40	ref 1, 8260	µg/l	0.1583	-0.2129
bromoform	154/3400	ref 2, 601	µg/l	0.1270	0.0030
	163HP	ref 1, 8260	µg/l	0.0495	0.0571
	321ITS40	ref 1, 8260	µg/l	0.1217	-0.1866
bromomethane	321ITS40	ref 1, 8260	µg/l	0.5860	-1.3341
n-butylbenzene	163HP	ref 1, 8260	µg/l	0.1485	-0.0286
	321ITS40	ref 1, 8260	µg/l	0.1448	-0.2177
sec-butylbenzene	163HP	ref 1, 8260	µg/l	0.1807	-0.1143
	321ITS40	ref 1, 8260	µg/l	0.1372	-0.2019
t-butylbenzene	163HP	ref 1, 8260	µg/l	0.1678	-0.1429
	321ITS40	ref 1, 8260	µg/l	0.1431	-0.2196
carbon tetrachloride	154/3400	ref 2, 601	µg/l	0.2233	0.4881
	163HP	ref 1, 8260	µg/l	0.2726	-0.1000
	321ITS40	ref 1, 8260	µg/l	0.1190	-0.1291
chlorobenzene	154/3400	ref 2, 601	µg/l	0.1056	-0.0296
	163HP	ref 1, 8260	µg/l	0.0728	-0.0571
	321ITS40	ref 1, 8260	µg/l	0.1472	-0.1964
chloroethane	154/3400	ref 2, 601	µg/l	0.2964	-0.4389
2-chloroethylvinylether	154/3400	ref 2, 601	µg/l	0.2482	-0.1314
chloroform	154/3400	ref 2, 601	µg/l	0.1782	0.3446
	163HP	ref 1, 8260	µg/l	0.0495	-0.1571
	321ITS40	ref 1, 8260	µg/l	0.1561	-0.2159
2-chlorotoluene	163HP	ref 1, 8260	µg/l	0.6863	0.1571
	321ITS40	ref 1, 8260	µg/l	0.1830	-0.2234
4-chlorotoluene	163HP	ref 1, 8260	µg/l	0.1030	-0.1286
	321ITS40	ref 1, 8260	µg/l	0.1483	-0.2154

4.0 Data Quality Objectives (cont)

Parameter	Machine #	Method	Units	Precision	Accuracy
Volatile compounds (cont)					
dibromochloromethane	154/3400	ref 2, 601	µg/l	0.1457	0.0523
	163HP	ref 1, 8260	µg/l	0.1050	0.1429
	321ITS40	ref 1, 8260	µg/l	0.1323	-0.1607
1,2-dibromo-	163HP	ref 1, 8260	µg/l	0.2878	0.2000
3-chloropropane	321ITS40	ref 1, 8260	µg/l	0.1343	-0.2481
1,2-dibromoethane	163HP	ref 1, 8260	µg/l	0.1917	-0.0429
	321ITS40	ref 1, 8260	µg/l	0.1421	-0.1646
dibromomethane	163HP	ref 1, 8260	µg/l	0.3923	0.3571
	321ITS40	ref 1, 8260	µg/l	0.1463	-0.1547
1,2-dichlorobenzene	154/3400	ref 2, 602	µg/l	0.0870	-0.2376
	163HP	ref 1, 8260	µg/l	0.1906	-0.0714
	321ITS40	ref 1, 8260	µg/l	0.1932	-0.3789
1,3-dichlorobenzene	154/3400	ref 2, 601	µg/l	0.2184	-0.2634
	163HP	ref 1, 8260	µg/l	0.0904	-0.0429
	321ITS40	ref 1, 8260	µg/l	0.2024	-0.4253
1,4-dichlorobenzene	154/3400	ref 2, 602	µg/l	0.0397	-0.1847
	163HP	ref 1, 8260	µg/l	0.4625	0.3429
	321ITS40	ref 1, 8260	µg/l	0.2003	-0.4063
1,1-dichloroethane	154/3400	ref 2, 601	µg/l	0.1618	0.1983
	163HP	ref 1, 8260	µg/l	0.0700	-0.1286
	321ITS40	ref 1, 8260	µg/l	0.1937	-0.2191
1,2-dichloroethane	154/3400	ref 2, 601	µg/l	0.1393	0.3730
	163HP	ref 1, 8260	µg/l	0.2232	-0.0143
	321ITS40	ref 1, 8260	µg/l	0.1446	-0.1979
1,1-dichloroethene	154/3400	ref 2, 601	µg/l	0.3356	-0.0919
	321ITS40	ref 1, 8260	µg/l	0.1775	-0.1020
c-1,2-dichloroethene	163HP	ref 1, 8260	µg/l	0.1906	-0.0286
	321ITS40	ref 1, 8260	µg/l	0.2081	-0.2566
t-1,2-dichloroethene	154/3400	ref 2, 601	µg/l	0.1774	0.2134
	163HP	ref 1, 8260	µg/l	0.1030	-0.1714
	321ITS40	ref 1, 8260	µg/l	0.1599	-0.1281
1,2-dichloropropane	163HP	ref 1, 8260	µg/l	0.0833	-0.0857
	321ITS40	ref 1, 8260	µg/l	0.1598	-0.1891
1,3-dichloropropane	163HP	ref 1, 8260	µg/l	0.1457	-0.0143
2,2-dichloropropane	163HP	ref 1, 8260	µg/l	0.3332	-0.4429
	321ITS40	ref 1, 8260	µg/l	0.2640	-0.5130
1,1-dichloropropene	163HP	ref 1, 8260	µg/l	0.0700	-0.1714
	321ITS40	ref 1, 8260	µg/l	0.1358	-0.1211
c-1,3-dichloropropene	163HP	ref 1, 8260	µg/l	0.1125	0.1857
	321ITS40	ref 1, 8260	µg/l	0.1916	-0.2693
t-1,3-dichloropropene	163HP	ref 1, 8260	µg/l	0.1959	0.2143
ethyl benzene	135/3400	ref 2, 602	µg/l	0.3463	-0.4986
	136/5890	ref 2, 602	µg/l	0.4478	-0.2551
	153/3700	ref 2, 602	µg/l	0.8993	-0.2963
	154/3400	ref 2, 602	µg/l	0.1668	0.0731
	163HP	ref 1, 8260	µg/l	0.0700	0.0286
	321ITS40	ref 1, 8260	µg/l	0.1498	-0.2084
isopropylbenzene	163HP	ref 1, 8260	µg/l	0.2030	-0.1143
4-isopropyltoluene	163HP	ref 1, 8260	µg/l	0.1485	-0.1286
n-isopropyltoluene	321ITS40	ref 1, 8260	µg/l	0.0135	-0.2086
methylene chloride	154/3400	ref 2, 601	µg/l	0.4448	0.3130
	163HP	ref 1, 8260	µg/l	1.2500	0.6429
	321ITS40	ref 1, 8260	µg/l	0.1057	0.4380

4.0 Data Quality Objectives (cont)

Parameter	Machine #	Method	Units	Precision	Accuracy
Volatile compounds (cont)					
methyl-tertiary-	135/3400	ref 2, 602	µg/l	7.3115	-2.8014
butylether	136/5890	ref 2, 602	µg/l	3.7320	5.0860
	153/3700	ref 2, 602	µg/l	6.8811	-36.0777
n-propylbenzene	163HP	ref 1, 8260	µg/l	0.1666	-0.0714
	321ITS40	ref 1, 8260	µg/l	0.1974	0.0829
Styrene	163HP	ref 1, 8260	µg/l	0.1485	-0.0714
	321ITS40	ref 1, 8260	µg/l	0.1570	-0.2270
1,1,1,2-tetra-	163HP	ref 1, 8260	µg/l	0.0700	0.0286
chloroethane	321ITS40	ref 1, 8260	µg/l	0.1457	-0.1889
1,1,2,2-tetra-	154/3400	ref 2, 601	µg/l	0.1734	-0.3976
chloroethane	163HP	ref 1, 8260	µg/l	0.1690	-0.1000
	321ITS40	ref 1, 8260	µg/l	0.3178	-0.4119
tetrachloroethene	154/3400	ref 2, 601	µg/l	0.1465	-0.0069
	163HP	ref 1, 8260	µg/l	0.0926	0.0000
	321ITS40	ref 1, 8260	µg/l	0.1411	-0.1544
toluene	135/3400	ref 2, 602	µg/l	0.3010	-0.6700
	136/5890	ref 2, 602	µg/l	0.4149	-0.0740
	153/3700	ref 2, 602	µg/l	0.9523	-0.3471
	154/3400	ref 2, 602	µg/l	0.1287	-0.0426
	163HP	ref 1, 8260	µg/l	0.0535	0.0000
	321ITS40	ref 1, 8260	µg/l	0.1445	-0.1333
1,2,3-trichlorobenzene	163HP	ref 1, 8260	µg/l	0.8464	-0.0286
	321ITS40	ref 1, 8260	µg/l	0.1582	-0.2513
1,2,4-trichlorobenzene	163HP	ref 1, 8260	µg/l	0.4189	-0.5143
	321ITS40	ref 1, 8260	µg/l	0.1480	-0.2581
1,1,1-trichloroethane	154/3400	ref 2, 601	µg/l	0.2853	0.4401
	163HP	ref 1, 8260	µg/l	0.1552	-0.1143
	321ITS40	ref 1, 8260	µg/l	0.1374	-0.1746
1,1,2-trichloroethane	154/3400	ref 2, 601	µg/l	0.1025	-0.0143
	163HP	ref 1, 8260	µg/l	0.1457	0.1143
	321ITS40	ref 1, 8260	µg/l	0.1419	-0.1896
trichloroethene	154/3400	ref 2, 601	µg/l	0.2686	0.4713
	163HP	ref 1, 8260	µg/l	0.1030	0.1286
	321ITS40	ref 1, 8260	µg/l	0.1363	0.0673
trichlorofluoromethane	154/3400	ref 2, 601	µg/l	0.2488	-0.5353
	321ITS40	ref 1, 8260	µg/l	0.2369	-0.0799
1,2,3-trichloropropane	163HP	ref 1, 8260	µg/l	0.2185	-0.0286
	321ITS40	ref 1, 8260	µg/l	0.1301	-0.2083
1,2,4-trimethylbenzene	163HP	ref 1, 8260	µg/l	0.1485	-0.0714
	321ITS40	ref 1, 8260	µg/l	0.1526	-0.2343
1,3,5-trimethylbenzene	163HP	ref 1, 8260	µg/l	0.1457	-0.1143
	321ITS40	ref 1, 8260	µg/l	0.1507	-0.2410
vinyl chloride	321ITS40	ref 1, 8260	µg/l	0.5469	-0.0370
xylene	135/3400	ref 2, 602	µg/l	1.0755	-1.8629
	136/5890	ref 2, 602	µg/l	0.7722	9.8286
	153/3700	ref 2, 602	µg/l	2.5996	-1.3343
	154/3400	ref 2, 602	µg/l	0.1846	0.1764
m,p-xylene	163HP	ref 1, 8260	µg/l	0.1829	0.0714
	321ITS40	ref 1, 8260	µg/l	0.3038	-0.4284
o-xylene	163HP	ref 1, 8260	µg/l	0.0990	-0.0143
	321ITS40	ref 1, 8260	µg/l	0.1576	-0.2269

5.0 SAMPLING PROCEDURES

Many clients using Midwest Analytical Services for analytical testing perform their own sampling using regulatory methods defined within their company. All sampling sites chosen by the client are defined by the government or the needs of the client.

When MAS picks up a sample from the client location, and sampling has been performed previously (either by the client or by MAS), the Standard Operating Procedure for Sample Pick-Up is used (SOP #207). This SOP describes transport method and chain of custody procedures.

Any containers supplied by MAS to the client for their own sampling are obtained from miscellaneous sources. All jars are made from glass and Teflon lined lids are used if necessary for the sampling performed. The following size jars are supplied by MAS: 32 ounce, 12 ounce, 8 ounce and 40 ml VOA vials.

Sample preservation procedures, holding times, type of container and amount of sample needed to perform analyses are listed in Exhibit A.

Midwest Analytical Services performs a limited amount of sampling. The Standard Operating Procedures written for the sampling techniques used are:

Description	SOP#
Standard Operating Procedure for Drum Sampling	203
Standard Operating Procedure for Wastewater Sampling	204
Standard Operating Procedure for Soil Sampling	205
Standard Operating Procedure for Air Sampling	206
Standard Operating Procedure for Wipe Sampling	210

Sample custody information is described in Section 6.0.

6.0 SAMPLE CUSTODY

All samples received by MAS must have a chain of custody. Depending on the type of sample submitted, one of the following chains of custody is used: Midwest Analytical Chain of Custody for Waste Waters (figure 6), Chain of Custody and Waste Analysis Request Form (figure 7), Chain of Custody for multiple samples or Underground storage tank analysis (figure 8), or Midwest Analytical Chain of Custody for Pick-Up Only (figure 9). The chain of custody contains information such as client name, sample identification, turnaround time, analysis needed and other information specified by the client. More information concerning the completion and selection of chains of custody is contained in the Standard Operating Procedure for Sample Pick-Up (SOP # 207).

The login department receives client samples. Login personnel review all information on the chain of custody and on the sample containers to be certain everything is correct before signing for the sample(s). Sample receipt, sample login and MAS sample identification procedures are described in the Standard Operating Procedure for Login (SOP #214). Sample handling and tracking procedures are specified in the Standard Operating Procedure for Sample Handling and Waste Disposal (SOP #202). This SOP contains information concerning sample storage and sample disposal.

7.0 CALIBRATION AND ANALYTICAL PROCEDURES

General calibration procedures are described in the Standard Operating Procedure for the Calibration of Instruments (SOP #104). This SOP specifies procedures for analyzing standards and creating and verifying the calibration curve. Listed below are measurement parameters analyzed on a regular basis at Midwest Analytical Services along with the Standard Operating Procedure numbers for the analytical method. All calibration procedures, frequencies and standards used for each parameter are contained in the SOP's. Any deviations from standard operating procedures are documented in the data log book and/or in quality assurance files (whichever is appropriate). The final report that is sent to the client, containing the analytical results, must have an 'M' added to the method number to indicate that it deviated from the standard method.

Parameter	SOP#
Organic Volatiles by GC/MS	401
Semivolatiles by GC/MS	403,410
TCLP Volatiles by GC/MS	401,701
TCLP Semivolatiles by GC/MS	402,701,308
Total Toxic Organics (TTO) by GC/MS	403,410,311
PNA by GC/MS	403,410,306,307
PCB by GC	404,303,304,305,301, 309
Pesticides and Herbicides by GC	405,701,313,316
601/602 and 8010/8020 by GC	406
PNA by GC	407,306,307
F-Scan by GC	408
BTEX by GC	409
Percent Water by GC	411
TPH by GC	412
Metals by ICP	601,701,702,703,704
Metals by AA	707,701,702,703,704
Metals by AA Hydride	708,701,702,703,704
Metals by AA Furnace	705,701,702,703,704
Mercury	709,701,702,703,704
Hexavalent Chromium	711
Sulfur/Sulfate	601,712
Total Organic Carbon	710
pH	801
Flash Point (Ignitability)	802
FOG/TPH	803
Biochemical Oxygen Demand	804
Total Suspended Solids	805
Percent Solids	806

7.0 Calibration and Analytical Procedures (cont)

Parameter	SOP#
Percent Ash	807
Fluoride	808
BTU/lb	809
Alkalinity	810
Phenol	811
Total and Amenable Cyanide	812
Formaldehyde	813
Total Sulfide	814
Odor	815
Density	816
Bottom Sediments and Water	817
Nitrogen as Nitrate	818
Nitrogen as Ammonia	819
Bromide	820
Chloride	821
Reactive Cyanide	822
Nitrite	823
Chemical Oxygen Demand	824
Iodide	825
Total Dissolved Solids	826
Total Halogens and Extractable Organic Halogens	827
Water Mix Screen	828
Acidity	829
Free Cyanide	830
Conductivity	831
Oxidation Screen	832
Reactive Sulfide	833
Sulfite	834

7.1 Calibration and Certificates of Analysis

All measuring equipment used in the laboratory must be traceable to a national or international standard or calibrated against a traceable standard. All thermometers must come with a certificate of analysis or be calibrated once per year against a traceable thermometer. Therefore, any necessary adjustments can be performed.

All certificates of analysis received by the laboratory for standards must have a statement of guarantee for the standard received..

All servicing contractors must also provide certificates of analysis for any standards used in calibration of any laboratory equipment.

All certificates received are kept in a binder located in the quality assurance department.

7.0 Calibration and Analytical Procedures (cont)

7.2 Standard Reference Materials

The following is a list of standard reference materials and quality control standards. If there are no reference materials available for certain parameters, the standards are made in the laboratory using pure (reagent grade) chemicals and solvents. Certificates of analysis are kept on file in the quality control department.

TEST PARAMETER	COMPANY/DESCRIPTION
QC: METALS	
As, Arsenic	Inorganic Ventures Custom Grade
Ba, Barium	Inorganic Ventures Custom Grade
Cd, Cadmium	Inorganic Ventures Custom Grade
Cr, Chromium	Inorganic Ventures Custom Grade
Co, Cobalt	Inorganic Ventures Custom Grade
Cu, Copper	Inorganic Ventures Custom Grade
Fe, Iron	Inorganic Ventures Custom Grade
Pb, Lead	Inorganic Ventures Custom Grade
Ni, Nickel	Inorganic Ventures Custom Grade
P, Phosphorus	Inorganic Ventures Custom Grade
Se, Selenium	Inorganic Ventures Custom Grade
Ag, Silver	Inorganic Ventures Custom Grade
Tl, Thallium	Inorganic Ventures Custom Grade
Zn, Zinc	Inorganic Ventures Custom Grade
Ca, Calcium	Inorganic Ventures Custom Grade
Mg, Magnesium	Inorganic Ventures Custom Grade
K, Potassium	Inorganic Ventures Custom Grade
Na, Sodium	Inorganic Ventures Custom Grade
Sb, Antimony	Inorganic Ventures Custom Grade
Mo, Molybdenum	Inorganic Ventures Custom Grade
S, Sulfur	Inorganic Ventures Custom Grade
Hexavalent Chromium	Inorganic Ventures Custom Grade
Al, Aluminum	Inorganic Ventures Custom Grade
B, Boron	High Purity Standards
Mn, Manganese	High Purity Standards
Hg, Mercury	Inorganic Ventures Custom Grade
Pt, Platinum	High Purity Standards
Sn, Tin	High Purity Standards
Ti, Titanium	High Purity Standards
W, Tungsten	High Purity Standards
Metals in soil	ERA Priority PollutanT/CLP Trace Metals

7.0 Calibration and Analytical Procedures (cont)
7.2 Standard Reference Materials

TEST PARAMETER	COMPANY/DESCRIPTION
QC: CLASSICAL CHEMISTRY	
pH	pHydrion Buffer Capsules
BOD	ERA WasteWatR Demand
COD	ERA WasteWatR Demand
Suspended Solids	ERA WasteWatR Hardness
Suspended Solids	APG Solids Set Point Std
Phenol	ERA WasteWatR CN & Phenol
Residual Chlorine	ERA WasteWatR Residual Cl
Grease and Oil	ERA WasteWatR Grease&Oil
TPH in Water	ERA WasteWatR TPH/H2O
Cyanide in Soil	ERA PPT/CLP Cyanide
TPH in Soil	ERA TPH in Soil QC Stds
QC: ORGANICS	
601/602	Ultra Scientific HCM-601, HC-070, AMM-602
601/602	ERA Priority PollutanT/CLP
TCLP Volatiles	Ultra Scientific TCLP-500
TCLP Volatiles	ERA TCLP Spiking Concentrations
8260	Ultra Scientific TCLP-500
8260	ERA Priority PollutanT/CLP
BTEX-MTBE	Ultra Scientific TCLP-510, 520
BTEX-MTBE	ERA BTEX in Water
TCLP Semi-Vols	Ultra Scientific TCLP-510
TCLP Semi-Vols	ERA TCLP Spiking Concentrations
TTO	Ultra Scientific US-100 thru US-107
PNA (PAH)	Ultra Scientific US-106
TCLP Pesticides/Herbicides	
Herbicides	Ultra Scientific HB-111, HB-101
Pesticides	Ultra Scientific TCLP-530
Pesticides	ERA TCLP Spiking Concentrations
Toxaphene	Ultra Scientific PP-270
Chlordane	Ultra Scientific PP-150
TCMX	Chem Service F-903S
PCB	NSI
PCB	ERA Priority PollutanT/CLP
METALS LAB	
Fe, Iron	SPEX Multi-Element Plasma Std
Cd, Cadmium	SPEX Multi-Element Plasma Std
Zn, Zinc	SPEX Multi-Element Plasma Std
As, Arsenic	SPEX Multi-Element Plasma Std
Ag, Silver	SPEX Multi-Element Plasma Std
P, Phosphorus	SPEX Multi-Element Plasma Std
Pb, Lead	SPEX Multi-Element Plasma Std
Ba, Barium	SPEX Multi-Element Plasma Std
Cr, Chromium	SPEX Multi-Element Plasma Std

7.0 Calibration and Analytical Procedures (cont)

7.2 Standard Reference Materials

TEST PARAMETER	COMPANY/DESCRIPTION
METALS LAB	
Tl, Thallium	SPEX Multi-Element Plasma Std
Co, Cobalt	SPEX Multi-Element Plasma Std
Se, Selenium	SPEX Multi-Element Plasma Std
Cu, Copper	SPEX Multi-Element Plasma Std
Ni, Nickel	SPEX Multi-Element Plasma Std
Se, Selenium	SPEX Plasma Std
Cr, Chromium	SPEX Plasma Std
Tl, Thallium	SPEX Plasma Std
C, Carbon	SPEX Plasma Std
Pb, Lead	SPEX Plasma Std
Zn, Zinc	SPEX Plasma Std
Ag, Silver	SPEX Plasma Std
Al, Aluminum	SPEX Plasma Std
K, Potassium	SPEX Plasma Std
Cu, Copper	SPEX Plasma Std
P, Phosphorus	SPEX Plasma Std
Ni, Nickel	SPEX Plasma Std
S, Sulfur	SPEX Plasma Std
Li, Lithium	Inorganic Ventures Custom Grade
Hg, Mercury	VWR Reference Standard
Hg, TCLP	SPEX TCLP-500
Mn, Manganese	SPEX Plasma Std
Be, Beryllium	SPEX Plasma Std
Pb, Lead	SPEX Plasma Std
Se, Selenium	SPEX Plasma Std
Cd, Cadmium	SPEX Plasma Std
Zn, Zinc	SPEX Plasma Std
ORGANICS LABORATORIES	
601/602	Chem Service PR-1M
TCLP Volatiles	ERA TCLP Spiking Concentrations
TCLP Volatiles	NSI (1,4-DCB)
8260	Ultra Scientific DWM-580
BTEX	Chem Service BTEX-1M
MTBE	Chem Service F909S
TCLP Semi-Vols	Ultra Scientific TCLP-510(B/N), TCLP-520(A)
TTO	Chem Service PP-HC1 thru PP-HC9
PNA (PAH)	Chem Service PP-HC6
TCLP Pesticides/Herbicides	
Herbicides	Supelco
Pesticides	Ultra Scientific TCLP-530
Toxaphene	ERA Priority PollutanT/CLP
Chlordane	ERA Priority PollutanT/CLP
TCMX	Supelco
PCB AROCHLORS	Chem Service

8.0 DATA REVIEW, VALIDATION AND REPORTING

Data review, validation and reporting for each individual parameter are listed in the Standard Operating Procedure for each method as listed in section 7.0.

Every employee of MAS must sign an ethics and data integrity agreement (figure 10). Once the results for a sample have been turned into login, the report for the sample is typed according to the Standard Operating Procedure for Typing Reports (SOP #215). The sample data is then reviewed according to the Standard Operating Procedure for Data Review and Validation (SOP #107). Personnel authorized to sign analytical reports are the lab director, manager, quality assurance coordinator and quality assurance supervisor.

9.0 INTERNAL QUALITY CONTROL CHECKS

All internal quality control practices which apply to the entire laboratory (every parameter) are described in the Standard Operating Procedure for Intralab Quality Assurance (SOP #101). Any test requiring specific quality control such as surrogate spikes and internal standards are described in the standard operating procedure for that test (see section 7.0 for a list of analytical SOP numbers).

Samples that are suspected to contain test or method interferences or give suspicious results are duplicated at the discretion of the operator. The duplicate testings are used to confirm results on one instrument by analyzing the sample on another instrument. In the case where duplicate results are consistent, the results reported to the client may be an average value. In most cases the highest value is reported, especially if the higher result is greater than or equal to a regulatory limit. The method reported is concurrent with the results reported. In the case of conflicting results the operator will determine which results to report, i.e. usually the method that has the least amount of interferences for that particular test parameter.

Duplicate testing can also be used to compare different test methods. A sample can be tested several times for a parameter and the results compared to determine which is the more accurate method for determination of the sample.

10.0 PERFORMANCE EVALUATIONS AND SYSTEMS AUDITS

All performance evaluations and systems audits are performed according to the Standard Operating Procedure for Performance Audits (SOP #109).

Inter-laboratory performance evaluation studies participated in on a regular basis are:

Chemical Waste Management Round Robin, four times per year
Proficiency Environmental Testing Program from Analytical Products Group, two times per year
Proficiency Testing, Environmental from Wisconsin State Laboratory of Hygiene, three times per year
EPA Water Supply Studies, four times per year
EPA Water Pollution Studies, four times per year

Each time an inter-lab quality control sample is analyzed, an intra-lab quality control sample is also analyzed to verify the results. All external lab data is processed and reported according to the Standard Operating Procedure for Intralab Quality Assurance (SOP #101) and the Standard Operating Procedure for Data Review and Validation (SOP #107). Unacceptable external laboratory data is processed and reported according to the Standard Operating Procedure for Corrective Action (SOP #112). All external laboratory data is included in the quality assurance package that is updated biannually by the quality assurance department (as described in SOP #101).

11.0 PREVENTIVE MAINTENANCE

All daily and preventive maintenance procedures performed on analytical equipment are listed in the Standard Operating Procedures for the methods found in section 7.0. Maintenance and service logs are kept for all equipment as described by and listed in the Standard Operating Procedure for Maintenance of Equipment and Service Logs. Each department's shutdown list is checked and initialed daily.

12.0 ASSESSMENT OF DATA PRECISION AND BIAS

Precision and bias detection limits are assessed on a regular basis. The parameters analyzed are calculated according to the Standard Operating Procedure for the Calculation of Precision and Bias Detection Limits. The data for the calculation of these statistics is obtained by analyzing a standard, either from the same or different standard solution used for calibration, usually with a value near the middle of the calibration curve. The standard is analyzed a minimum of seven times.

Precision is the standard deviation of the experimental values that are calculated using the following formula:

$$\sqrt{\frac{\sum_{i=1}^{i=n} |x_i - \bar{x}|^2}{n-1}}$$

Accuracy, or bias, is calculated by subtracting the true value of the standard from the average value of the QC samples. The average, or mean, is found with the following calculation:

$$\frac{\sum_{i=1}^{n} x_i}{n}$$

Detection and reporting limits for a parameter are calculated the same way. However, instead of running a sample with a concentration in the middle of the standard curve, a blank or sample near the expected detection limit (if no signal is seen for blank analysis) is run a minimum of ten times. The standard deviation of the values is calculated as defined above. The detection limit is three times the standard deviation and the reporting limit is ten times the standard deviation. Blanks can be prepared according to the method to obtain method detection limits.

13.0 CORRECTIVE ACTION

Whenever quality control analytical data is consistently outside of acceptable recovery limits (as defined in the SOP's), corrective action must be completed as soon as possible to rectify the situation. Either the step by step procedure is analyzed for mistakes and possible changes or a formal audit is performed and any changes are made as soon as possible. All corrective actions performed must be documented in writing, in the department's laboratory notebook. Any QC samples that fail must have corrective action documented and a copy returned to the quality control/assurance department for review. Unacceptable external laboratory sample analyses are analyzed until the a solution is found and the problem corrected. A written explanation of the problem that occurred during analysis of the external lab sample and how the situation was rectified is kept on file in the quality control department and a copy is mailed to the company that sent the sample (if necessary). More detailed information relating to corrective action can be found in the Standard Operating Procedure for Corrective Action (SOP #112) and the Standard Operating Procedure for Performance Audits (SOP #109).

Individuals who may initiate procedural changes are:
Lab Director
Lab Manager
Quality Assurance Coordinator
Quality Assurance Supervisor

All analytical changes must be approved by the Quality Assurance Coordinator and supervisor and the departmental supervisor(s).

14.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

The quality assurance coordinator reports to management on a daily basis to discuss operational problems. There is a formal meeting once a week to discuss all quality control data, performance audits and any procedural changes made and their effect. Quality assurance meets with management to discuss the control charts produced during the quarter and to review measurement accuracy and precision.

15.0 DOCUMENTATION

The procedures described in this Quality Assurance Project Plan and in in-house Standard Operating Procedures are to be followed as stated. If for any reason, there are deviations from these procedures, the changes must be approved by the lab director, lab manager and the quality assurance coordinator or supervisor. The change must be documented and kept on file in the quality assurance department.

All employees are provided with a copy of this manual when they are hired. Employees must read and sign a compliance agreement form (figure 11), that is detached and placed in their employee file. The original copy that is given to each employee will be on white paper. Any updates or revisions will be provided to employees on colored paper. A hard copy of this manual is kept in the quality assurance department, accessible to every employee of Midwest Analytical Services, Inc.

Any quality assurance documents distributed throughout the laboratory must be signed by the receiving individual (see figure 12). This document receipt log is kept on file in the QC department for future reference. Meetings may be held with all lab personnel involved to discuss policies, objectives and implementation of any circulated documentation.

The Quality Assurance Project Plan is updated by the quality assurance supervisor or coordinator. Any major changes made in procedures mentioned in this plan must be updated immediately. Also, the quality assurance supervisor must review the Project Plan every six months and update any changes.

Department supervisors are responsible for revising the standard operating procedures relevant to each one's department. Standard operating procedures must be revised as soon as any changes in the procedures occur. The revision number of the revised SOP must be increased by one and the SOP submitted to the quality assurance supervisor. After approval by the quality assurance supervisor, the SOP must then be approved by the lab manager or lab director. All master copies are kept in the quality control department in binders. Copies specific for each department are kept in that department.

Any deviations from procedures listed in this document or any quality assurance document must first be approved by the lab manager and lab director. If the deviation is deemed appropriate and justifiable, the change must be documented and kept on file in the quality assurance department.

16.0 REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. USEPA, SW-846, Third Edition, November 1990.

2. Methods for Chemical Analysis of Water and Wastes. USEPA, 600/4-79-020, March 1983.

3. Annual Book of ASTM Standards. American Society for Testing Materials, vols. 1-15, 1992.

4. Standard Methods for the Examination of Water and Wastewater. American Public Health Association, 17th Edition, 1989.

5. Code of Federal Regulations; Title 40, Protection of Environment; Chapter 1, Environmental Protection Agency; Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants. The Federal Register, July 1990.

6. Orion Guide to Water and Wastewater Analysis. Orion Research, WeWWG/5880, 1985.

7. Methods for the Determination of Organic Compounds in Drinking Water, Supplement 1. USEPA, 600/4-90/020, July 1990.

8. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans. USEPA, QAMS-005/80, December 1980.

9. Handbook for Analytical Quality Control in Water and Wastewater Laboratories. USEPA, 600/4-79-019, March 1979.

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Midwest Analytical Services, Inc.

" Where industry comes for answers. "

Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-3680
FAX No.: (313) 964-2339

CONFIDENTIALITY AGREEMENT

I. I, ______________________________, hereby agree to keep confidential, all analytical data and client information. I will not discuss this information with anyone outside of this company.

II. I agree that in the performance of my duties at Midwest Analytical Services, Inc.:

a. I will not use or remove any company documentation from premises of MAS, without written approval from upper management, for any other purpose than to improve my performance at Midwest Analytical Services, Inc.

b. I will not remove any equipment or reagents from the premises without written approval from upper management.

c. I will not discuss any standard operating procedures or practices with anyone outside the company without written approval from upper management.

III. I agree to inform Midwest Analytical Services, Inc. if myself or any other employee deviates from this agreement.

____
Signature

____
Date

Figure 1

Midwest Analytical Services, Inc.
" Where industry comes for answers. "
Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-3680
FAX No.: (313) 964-2339

CONFIDENTIALITY AGREEMENT

I hereby agree to keep confidential, the standard operating procedures or practices of Midwest Analytical Services, Inc. I will not use the information that I have acquired while visiting this company for any other business.

Name (print): ______________________

Signature: ______________________

Date: ______________________

Figure 2

214 D:\PW\FORMS\CONFID

Midwest Analytical Services, Inc.

" *Where industry comes for answers.* "

Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-3680
FAX No.: (313) 964-2339

CONFIDENTIALITY AGREEMENT

I hereby agree to keep confidential, the standard operating procedures or practices of Midwest Analytical Services, Inc. I will not use the information that I have acquired while visiting this company for any other business.

Name (print): ______________________________

Signature: ______________________________

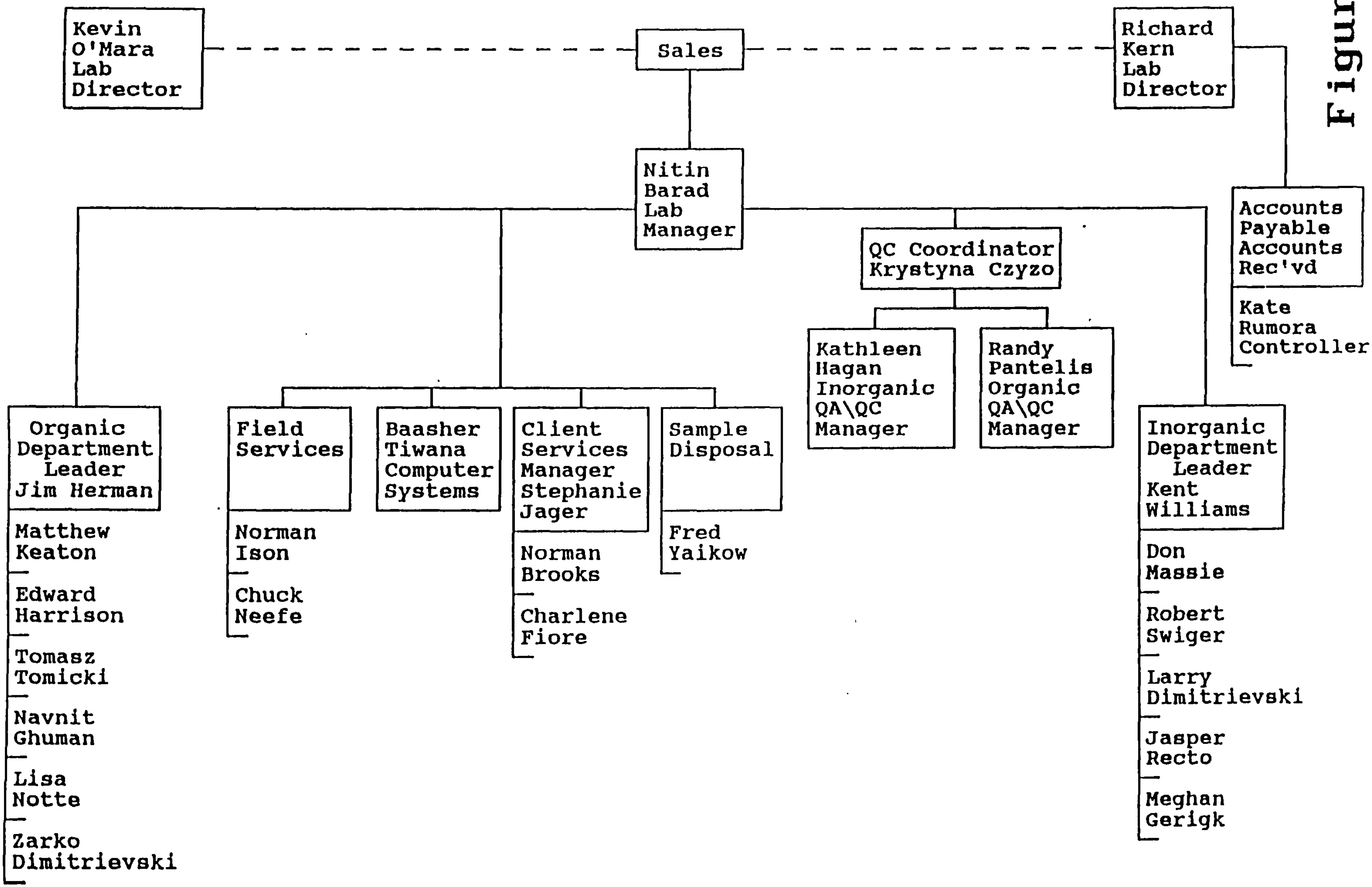
Date: ______________________________

Figure 2

MIDWEST ANALYT.CAL SERVICES, INC.

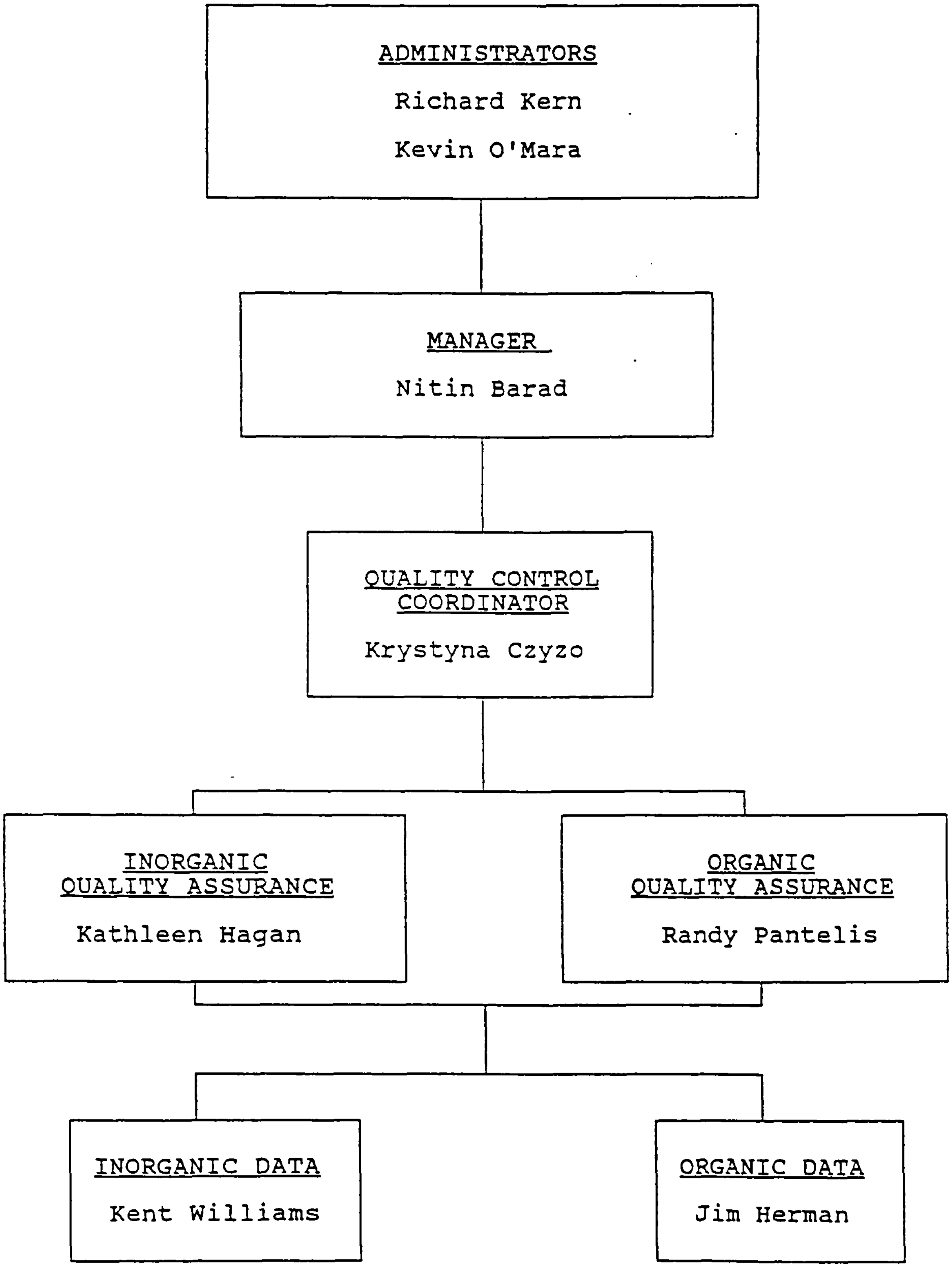
ORGANIZATIONAL CHART

Figure 3



QUALITY ASSURANCE

Flow of Data



MIDWEST ANALYTICAL SERVICES, INC.

CLIENT COMPLAINT FORM

Date: ____________	Client: ____________ Company: ____________
IN	Complaint: ____________
☐ Complaint	____________
☐ Action	____________
☐ Done	Action: ____________
	____________
	____________
	____________

Date: ____________	Client: ____________ Company: ____________
IN	Complaint: ____________
☐ Complaint	____________
☐ Action	____________
☐ Done	Action: ____________
	____________
	____________
	____________

Date: ____________	Client: ____________ Company: ____________
IN	Complaint: ____________
☐ Complaint	____________
☐ Action	____________
☐ Done	Action: ____________
	____________
	____________
	____________

Figure 5

Midwest Analytical Services, Inc.
" Where industry comes for answers. "
Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-3680
FAX No.: (313) 964-2339

SAMPLE:

VOLUME,

CONTAINER TYPE,

PRESERVATIVE,

AND HOLDING TIME

Exhibit A

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

TABLE OF CONTENTS

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

WATER AND WASTEWATER

TEST	SAMPLE TYPE	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
ACIDITY		100	P,G	COOL, 4°C	24 HOURS	2310
ALKALINITY		100	P,G	COOL, 4°C	24 HOURS	2320
ASBESTOS (PLM)		100	P,G	NONE REQUIRED	30 DAYS	600/M4-82020
ASBESTOS (TEM)		100	P,G	NONE REQUIRED	30 DAYS	----
BICARBONATE		100	P,G	COOL, 4°C	24 HOURS	2320
BOD	COMP.	1000	P,G	COOL, 4°C	48 HOURS	405.1
BROMIDE		100	P,G	NONE REQUIRED	28 DAYS	D1246
CARBONATE		100	P,G	COOL, 4°C	24 HOURS	2320
COD	COMP.	50	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	410.4
CHLORIDE (ISE)		50	P,G	NONE REQUIRED	28 DAYS	D512
CHLORINE - (FIELD)		200	P,G	NONE REQUIRED	ANALYZE IMMED.	PAPER TEST
CHLORINE, TOTAL RESIDUAL		200	P,G	NONE REQUIRED	ANALYZE IMMED.	4500-Cl-G
CHLORINE DEMAND		200	P,G	NONE REQUIRED	ANALYZE IMMED.	409A
COLIFORM FECAL		100	P,G	COOL, 4°C 0.008% SODIUM THIOSULFATE	6 HOURS	9132
COLIFORM TOTAL		100	P,G	COOL, 4°C 0.008% SODIUM THIOSULFATE	6 HOURS	9132
COLOR		50	P,G	COOL, 4°C	48 HOURS	110.3
CONDUCTIVITY		100	P,G	COOL, 4°C	28 DAYS	120.1

METHOD SOURCES: MCAWW, ASTM, CFR, STANDARD METHODS

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

WATER AND WASTEWATER

EST	SAMPLE TYPE	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
CYANIDES, TOTAL	GRAB	500	P,G	COOL, 4°C SODIUM HYDROXIDE TO pH>12, *0.6g ASCORBIC ACID	14 DAYS	335.2/ 335.3
AMENABLE	GRAB	500	P,G	COOL, 4°C SODIUM HYDROXIDE TO pH>12, *0.6g ASCORBIC ACID	14 DAYS	335.1
FREE		500	P,G	COOL, 4°C SODIUM HYDROXIDE TO pH>12, *0.6g ASCORBIC ACID	14 DAYS	4500-CN-I
DISSOLVED OXYGEN		300	BOD BOTTLE	NONE REQUIRED	ANALYZE ON SITE	360.1
FLUORIDE	COMP.	300	P,G	NONE REQUIRED	28 DAYS	340.2
JNGI, TOTAL		50	P,G	NONE REQUIRED	48 HOURS	STAIN
HARDNESS		100	P,G	NITRIC ACID TO pH<2	6 MONTHS	200.7 & 2340B
IODIDE		100	P,G	COOL, 4°C	24 HOURS	D1246
LEGIONELLA		100	P,G	NONE REQUIRED	48 HOURS	DYE
METALS, TOTAL	COMP.	100	P,G	COOL, 4°C NITRIC ACID TO pH<2	6 MONTHS	200.7
MERCURY	COMP.	100	G ONLY	COOL, 4°C NITRIC ACID TO pH<2	28 DAYS	245.2
CHROMIUM VI	COMP.	200	P,G	COOL, 4°C NO PRESERV.	24 HOURS	7196
DRINKING WATER	----	1000	P,G	COOL, 4°C NITRIC ACID TO pH<2	6 MONTHS	200.7
DISSOLVED	----	200	P,G	COOL, 4°C NITRIC ACID TO pH<2 FILTER ON SITE	6 MONTHS	200.7

METHOD SOURCES: MCAWW, ASTM, STANDARD METHODS

*SHOULD ONLY BE USED IN THE PRESENCE OF RESIDUAL CHLORINE

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

WATER AND WASTEWATER

TEST	SAMPLE TYPE	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
NITROGEN AS:						
AMMONIA	COMP.	400	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	350.3
KJELDAHL	COMP.	500	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	351.3
NITRATE	COMP.	100	P,G	COOL, 4°C	48 HOURS	D81-0025
NITRITE	COMP.	50	P,G	COOL, 4°C	48 HOURS	354.1
ODOR		200	G ONLY	COOL, 4°C	24 HOURS	140.1
OIL & GREASE	GRAB	1000	G ONLY	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	413.2
pH	GRAB	25	P,G	NONE REQUIRED	ANALYZE IMMED.	150.1
HENOLICS (4AAP), TOTAL	GRAB	500	G ONLY	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	420.1/ 420.2
PHOSPHATE		50	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	200.7
PHOSPHORUS, TOTAL		50	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	200.7
DISSOLVED		50	P,G	COOL, 4°C SULFURIC ACID TO pH<2 FILTER ON SITE	24 HOURS	200.7
RADIATION SCREEN		100	P,G	NONE REQUIRED	---	D3648
SOLIDS, TOTAL	COMP.	100	P,G	COOL, 4°C	7 DAYS	160.3
DISSOLVED (TDS)	COMP.	100	P,G	COOL, 4°C	7 DAYS	160.1
SUSPENDED (TSS)	COMP.	500	P,G	COOL, 4°C	7 DAYS	160.2
SULFATE		50	P,G	COOL, 4°C	28 DAYS	200.7

METHOD SOURCES: MCAWW, ASTM

WATER AND WASTEWATER

TEST	SAMPLE TYPE	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
SULFIDE, TOTAL	GRAB	500	P,G	COOL, 4°C ADD 2ml OF 2N ZINC ACETATE PLUS SODIUM HYDROXIDE TO pH>9	7 DAYS	376.1
SULFITE		50	P,G	NONE REQUIRED	ANALYZE IMMED.	377.1
SULFUR		100	P,G	COOL, 4°C NITRIC ACID TO pH<2	6 MONTHS	200.7
SURFACTANTS/MBAS		250	P,G	COOL, 4°C	48 HOURS	5540C
TEMPERATURE		1000	P,G	NONE REQUIRED	ANALYZE ON SITE	170.1
TOTAL BACTERIA/ TOTAL PLATE COUNT		1000	P,G	COOL, 4°C	48 HOURS	9215D
TOTAL ORGANIC CARBON (TOC)		25	P,G	COOL, 4°C SULFURIC ACID OR HYDROCHLORIC ACID TO pH<2	28 DAYS	415.1
TOTAL ORGANIC HALOGENS (TOX)		100	G, AMBER TEFLON LINED CAP	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	9020
TOTAL PETROLEUM HYDROCARBONS(TPH)		1000	G ONLY	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	418.1
TRIHALOMETHANES		40	VOA	COOL, 4°C	14 DAYS	502.2
TURBIDITY		100	P,G	COOL, 4°C	48 HOURS	180.1

METHOD SOURCES: MCAWW, EPA SW-846, STANDARD METHODS

2727 SECOND AVE
DETROIT, MI 48201

METHOD NUMBER	TEST	SAMPLE TYPE	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDIN TIME
601	VOLATILES: HALOGENATED	GRAB	2 x 40	VOA	COOL, 4°C *0.008% SODIUM THIOSULFATE	14 DA
602	VOLATILES: AROMATIC & NON-HALOGENATED (BTEX & MTBE)	GRAB	2 x 40	VOA	COOL, 4°C SULFURIC ACID TO pH<2 *0.008% SODIUM THIOSULFATE	14 DA
604	PHENOLS-GC		1000	G, AMBER TEFLON LINED CAP	COOL, 4°C	7/40
608	PESTICIDES & PCBS		1000	G, AMBER TEFLON LINED CAP	COOL, 4°C	7/40
610	PNA/PAH		1000	G, AMBER TEFLON LINED CAP	COOL, 4°C	7/40
615	HERBICIDES		1000	G, AMBER TEFLON LINED CAP	COOL, 4°C	7/40
624	TTO (VOLATILES)	GRAB	40	VOA	COOL, 4°C *0.008% SODIUM THIOSULFATE	14 DA
			&			
			40	VOA	COOL, 4°C SULFURIC ACID TO pH<2 *0.008% SODIUM THIOSULFATE	14 DA
625	TTO (SEMI-VOLATILES, PNA/PAH, PCBS, PESTICIDES)	COMP.	1000	G, AMBER TEFLON LINED CAP	COOL, 4°C	7/40
CALIFORNIA-DHS (8015M)	TPH-GC		2 x 1000	G, AMBER TEFLON LINED CAP	COOL, 4°C HYDROCHLORIC ACID TO pH<2	7/47
GRO ▪PUBL-SW-140	GASOLINE RANGE ORGANICS		2 x 40	VOA	COOL, 4°C HYDROCHLORIC ACID TO pH<2	14 DA
DRO ▪PUBL-SW-141	DIESEL RANGE ORGANICS		2 x 1000	G, AMBER TEFLON LINED CAP	COOL, 4°C HYDROCHLORIC ACID TO pH<2	7/47
---	FSCAN		2 x 40	VOA	COOL, 4°C	14 DA

METHOD SOURCES: EPA-600/4-79-020, CALIFORNIA METHOD, ▪WISCONSIN DNR
^ = DAYS UNTIL EXTRACTION/DAYS AFTER EXTRACTION
*SHOULD ONLY BE USED IN THE PRESENCE OF RESIDUAL CHLORINE

SOIL, SEDIMENT, SLUDGE & SOLID WASTE

METHOD NUMBER	TEST	MINIMUM VOLUME REQUIRED (oz)	CONTAINER	PRESERVATIVE	HOLDING TIME
8010	VOLATILES: HALOGENATED	4	G, WITH SEPTUM	COOL, 4°C	14 DAYS
8020	VOLATILES: AROMATIC & NON-HALOGENATED (BTEX & MTBE)	4	G, WITH SEPTUM	COOL, 4°C	14 DAYS
8040	PHENOLS-GC	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^
8080	PESTICIDES & PCBS	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^
8100,8310	PNA/PAH	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^
8150	HERBICIDES	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^
8260	TTO (VOLATILES)	4	G, WITH SEPTUM	COOL, 4°C	14 DAYS
8270	TTO (SEMI-VOLATILES, PNA/PAH, PCBS, PESTICIDES)	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^
CALIFORNIA-DHS (8015M)	TPH-GC	8	G, TEFLON LINED CAP	COOL, 4°C	3 DAYS
GRO ▪PUBL-SW-140	GASOLINE RANGE ORGANICS	25g in 40ml	VOA	*COOL, 4°C	14 DAYS
DRO ▪PUBL-SW-141	DIESEL RANGE ORGANICS	4	VOA	COOL, 4°C	3 DAYS
---	FSCAN	4	G, WITH SEPTUM	COOL, 4°C	14 DAYS

METHOD SOURCES: EPA SW-846, CALIFORNIA METHOD, ▪WISCONSIN DNR

^ = DAYS UNTIL EXTRACTION/DAYS AFTER EXTRACTION

* ADD 25 g OF METHANOL TO SAMPLE VIAL IMMEDIATELY AFTER SAMPLE COLLECTION

METHOD UMBER	TEST	MINIMUM VOLUME REQUIRED (ml)	CONTAINER	PRESERVATIVE	HOLDING TIME
8010	VOLATILES: HALOGENATED	**2 x 40	G, WITH SEPTUM	COOL, 4°C SULFURIC ACID TO pH<2 *4 DROPS	14 DAYS
8020	VOLATILES: AROMATIC & NON-HALOGENATED (BTEX & MTBE)	**2 x 40	G, WITH SEPTUM	COOL, 4°C SULFURIC ACID TO pH<2 *4 DROPS	14 DAYS
8040	PHENOLS-GC	**1 gal.	G, AMBER TEFLON LINED CAP	COOL, 4°C *3 mls	7/40^
8080	PESTICIDES & PCBS	**1 gal.	G, AMBER TEFLON LINED CAP	COOL, 4°C *3 mls	7/40^
8100,8310	PNA/PAH	**1 gal.	G, AMBER TEFLON LINED CAP	COOL, 4°C *3 mls	7/40^
8150	HERBICIDES	**1 gal.	G, AMBER TEFLON LINED CAP	COOL, 4°C *3 mls	7/40^
8260	TTO (VOLATILES)	**2 x 40	G, WITH SEPTUM	COOL, 4°C *4 DROPS	14 DAYS
8270	TTO (SEMI-VOLATILES, PNA/PAH, PCBS, PESTICIDES)	**1 gal.	G, AMBER TEFLON LINED CAP	COOL, 4°C *3 mls	7/40^
CALIFORNIA-DHS	TPH-GC	100	G ONLY	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS
---	FSCAN	2 x 40	G, WITH SEPTUM	COOL, 4°C	14 DAYS

METHOD SOURCES: EPA SW-846, CALIFORNIA METHOD

^ = DAYS UNTIL EXTRACTION/DAYS AFTER EXTRACTION
(FOR CONCENTRATED LIQUID WASTE, THE HOLDING TIME = 14/40)

*10 % SODIUM THIOSULFATE: SHOULD ONLY BE USED IN THE PRESENCE OF RESIDUAL CHLORINE

**ALL CONCENTRATED LIQUID WASTE: USE AN 8oz WIDEMOUTH JAR WITHOUT PRESERVATIVES.

LIQUID WASTE & SOIL, SEDIMENT, SLUDGE & SOLID WASTE

TEST	MINIMUM VOLUME REQUIRED (g/ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
ACIDITY	20/100	P,G	COOL, 4°C	14 DAYS	2310
ALKALINITY	20/100	P,G	COOL, 4°C	14 DAYS	2320
ASBESTOS (PLM)	10/100	P,G	NONE REQUIRED	30 DAYS	600/M4-82020
ASBESTOS (TEM)	10/100	P,G	NONE REQUIRED	30 DAYS	----
ASH CONTENT	50/100	P,G	COOL, 4°C	7 DAYS	160.4
BOTTOM SEDIMENT & WATER (BS&W)	100mls	P,G	NONE REQUIRED	28 DAYS	D96
BRITISH THERMAL UNITS (BTU/lb)	50/50	P,G	NONE REQUIRED	28 DAYS	D240
CHLORINE	20/100	P,G	COOL, 4°C	14 DAYS	D4208, 207M-PARR
CONDUCTIVITY	100	P,G	COOL, 4°C	28 DAYS	9050
CORROSIVITY/pH	25/25	P,G	NONE REQUIRED	ANALYZE IMMED.	9045/9040
CYANIDE, TOTAL	50/500	P,G	COOL, 4°C * SODIUM HYDROXIDE TO pH>12	14 DAYS	9010
AMENABLE	100/500	P,G	COOL, 4°C * SODIUM HYDROXIDE TO pH>12	14 DAYS	9010
REACTIVE	50/500	P,G	COOL, 4°C	ANALYZE IMMED.	7.3.3.2
DENSITY	50/250	P,G	NONE REQUIRED	28 DAYS	D5057/D287
EXTRACTABLE ORGANIC HALOGENS (EOX)	20/20	G ONLY	COOL, 4°C	28 DAYS	9020M (TR-019
FORMALDEHYDE	50/50	G ONLY	COOL, 4°C	28 DAYS	8315
IGNITIBILITY/ FLASH POINT	200/100	G ONLY	COOL, 4°C	ANALYZE IMMED.	1010

METHOD SOURCES: EPA SW-846, ASTM, CFR, STANDARD METHODS, MCAWW, DOHRMANN, PARR

*AQUEOUS SAMPLES ONLY

LIQUID WASTE & SOIL, SEDIMENT, SLUDGE & SOLID WASTE

TEST	MINIMUM VOLUME REQUIRED (g/ml)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
METALS, TOTAL	100/100	P,G	COOL, 4°C *NITRIC ACID TO pH<2	6 MONTHS	6010
MERCURY	100/100	G ONLY	COOL, 4°C *NITRIC ACID TO pH<2	28 DAYS	7471/7470
CHROMIUM VI	100/200	P,G	COOL, 4°C NO PRESERV.	24 HOURS	7196
OXIDATION SCREEN	20/100	P,G	NONE REQUIRED	28 DAYS	D4981
PAINT FILTER TEST	50/100	P,G	NONE REQUIRED	28 DAYS	9095
PHENOLS, TOTAL	500	P,G	COOL, 4°C SULFURIC ACID TO pH<2	28 DAYS	9065,9066
PERCENT WATER	50/50	P,G	NONE REQUIRED	28 DAYS	D3792
RADIATION SCREEN	10/100	P,G	NONE REQUIRED	---	D3648
SOLIDS, TOTAL (%)	50/100	P,G	NONE REQUIRED	7 DAYS	2540-G
SULFIDE, TOTAL	50/500	P,G	COOL, 4°C *ADD 2ml OF 2N ZINC ACETATE	7 DAYS	9030
REACTIVE	50/100	P,G	COOL, 4°C	A.S.A.P.	7.3.4.1
TOTAL HALOGENS AS CHLORINE (TX)	20/100	P,G	COOL, 4°C	14 DAYS	9020M - (TR-019)
TOTAL ORGANIC CARBON (TOC)	25/25	P,G	COOL, 4°C *SULFURIC ACID OR HYDROCHLORIC ACID TO pH<2	28 DAYS	9060
TOTAL PETROLEUM HYDROCARBONS(TPH)	100/100	G ONLY	COOL, 4°C *SULFURIC ACID TO pH<2	28 DAYS	418.1
VISCOSITY	1000mls	P,G	COOL, 4°C	28 DAYS	D2196
WATER MIX SCREEN	50/100	P,G	COOL, 4°C	28 DAYS	D5058

METHOD SOURCES: EPA SW-846, MCAWW, ASTM, DOHRMANN, STANDARD METHODS

*AQUEOUS SAMPLES ONLY

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

TCLP (TOXICITY CHARACTERISTIC LEACHING PROCEDURE) WASTE

TEST	MINIMUM VOLUME REQUIRED (oz)	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD NUMBER
METALS,	8	P,G	COOL, 4°C *NITRIC ACID TO pH<2	180/180^	1311 & 6010
MERCURY	8	G ONLY	COOL, 4°C *NITRIC ACID TO pH<2	28/28^	1311 & 7471/7470
ORGANICS:					
VOLATILES	8	G, WITH SEPTUM	COOL, 4°C	14/14^	1311 & 8010, 8020 OR 826
SEMI-VOLATILES	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^	1311 & 8270
PESTICIDES & HERBICIDES	8	G, TEFLON LINED CAP	COOL, 4°C	14/40^	1311 & 8080, 815

METHOD SOURCES: EPA SW-846, CFR

*AQUEOUS SAMPLES ONLY

^ = DAYS UNTIL EXTRACTION/DAYS AFTER EXTRACTION

MIDWEST ANALYTICAL SERVICES, INC.
2727 SECOND AVE
DETROIT, MI 48201

REFERENCES

1. Methods for the Determination of Organic Compounds in Drinking Water, Supplement 1. USEPA, 600/4-90/020, July 1990.

2. Code of Federal Regulations; Title 40, Protection of Environment; Chapter 1, Environmental Protection Agency; Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants. The Federal Register, July 1990.

3. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. USEPA, SW-846, Third Edition, November 1990.

4. Methods for Chemical Analysis of Water and Wastes. USEPA, 600/4-79-020, March 1983.

5. Annual Book of ASTM Standards. American Society for Testing Materials, vols. 1-15, 1992.

6. Standard Methods for the Examination of Water and Wastewater. American Public Health Association, 17th Edition, 1989.

7. DHS-California method by GC-FID.

8. Total Extractable and Leachable Organic Halides in soil and sediments. John T. Martin and Yoshihiro Takahashi, Dorhmann division technical reprint TR-019.

9. Analytical Methods for Oxygen Bombs. Parr Instrument Company, August 24, 1987.

10. Leaking Underground Storage Tank (LUST) Guidance, Wisconsin DNR, PUBL-SW-130 92 rev., April, 1992.

*NOTE: This information is current through January, 1993 and is subject to change.

LOGIN: A:\CHAINWW2
MIDWEST ANALYTICAL SERVICES
2727 SECOND AVENUE PHONE: (313)964-3680
DETROIT, MI 48201 FAX: (313)964-2339

LAB USE: MAS#
DESC.:

CHAIN OF CUSTODY FOR A SINGLE WASTE WATER SAMPLE
(PLEASE FILL OUT ALL INFORMATION TO EXPEDITE SERVICE)

TO: MIDWEST ANALYTICAL SERVICES INC. RUSH/NORMAL: ____________
CLIENT: ____________ SAMPLE COLLECTOR: ____________
P.O.#: ____________ RELEASE/REFERENCE#: ____________
PROJECT : ____________
RESULTS TO THE ATTENTION OF : ____________
TEL. (313)- ____________ FAX (313)- ____________ NEED FAXED: ⌂ YES ⌂ NO
LOCATION OF SAMPLE:
⌂ PERMIT (INCLUDE PERMIT) ⌂ IN PLANT ⌂ OUTSIDE SEWER ⌂ OTHER ____________

SAMPLE IDENTIFICATION		
TYPE OF SAMPLE	DATE OF COLLECTION	TIME
GRAB	/ /	AM OR PM
COMPOSITE	/ / TO / /	AM OR PM

BOTTLE NUMBER	GRAB OR COMPOSITE	PRESERVATIVE & CONTAINER	ANALYSIS REQUIRED (CIRCLE ONES REQUIRED)
1	GRAB	4 OZ. PLASTIC	pH ____________
2	GRAB	500 ML. GLASS H2SO4	FOG
3	GRAB	500 ML PLASTIC NaOH	CYANIDE, TOT. OR AMEN
4	COMPOSITE	250 ML GLASS HNO3 (PLASTIC IF Hg NOT R'QD)	Cr, Pb, Cu, Zn, Ni, Cd, Ag, Hg, As, P, Fe
5	COMPOSITE	500 ML PLASTIC	BOD & TSS
6	GRAB	2- 40 ML GLASS VIAL	TTO- VOLATILE
7	COMPOSITE	2- 1000 ML GLASS AMBER	TTO- SEMIVOL & NONVOL.

RELINQUISHED BY: ____________ DATE/TIME: ____________

RELINQUISHED BY: ____________ DATE/TIME: ____________

RECEIVED BY: ____________ DATE/TIME: ____________

RECD. AT LAB BY: ____________ DATE/TIME: ____________

COMMENTS: ____________

MAS USE : STATUS OF SAMPLE RECEIVED: ⌂ COLD ⌂ ROOM TEMP
WAS SAMPLE SEALED: ⌂ YES ⌂ NO
PICKUP ___ OF ___ ⌂ C ⌂ NC
⌂ SET-UP/SAMPLING ⌂ FIELD HOURS ________

Figure 6

C:PW\WRKSHT\CHAIN

MIDWEST ANALYTICAL SERVICES
2727 SECOND AVENUE PHONE: (313)964-3680
DETROIT, MI 48201 FAX: (313)964-2339

LAB USE ONLY
MAS NUMBER:
DESC.

CHAIN OF CUSTODY AND WASTE ANALYSIS REQUEST FORM
(PLEASE FILL OUT ALL INFORMATION TO EXPEDITE SERVICE)

TO: MIDWEST ANALYTICAL SERVICES INC. RUSH/NORMAL:__________

FROM:__________ CHARGE TO P.O.#__________

RESULTS TO THE ATTENTION OF:__________

TELEPHONE:__________ FAX:__________

PLEASE ANALYZE SAMPLE ID:__________

__________FOR THE FOLLOWING ANALYSES

( ) FULL TCLP WASTE CHARACTERIZATION
(INCLUDES METALS, CHARACTERISTICS & ORGANICS)

( ) TCLP METALS & CHARACTERISTICS
- ( ) FLASHPOINT
- ( ) TCLP EXTRACTION
- ( ) METALS (10)
- ( ) REACTIVE CYANIDE
- ( ) REACTIVE SULFIDE
- ( ) pH

( ) MISCELLANEOUS
- ( ) NICKEL
- ( ) THALLIUM
- ( ) TOTAL METALS (10)
- ( ) EP TOX METALS
- ( ) TOTAL ORGANIC HALOGEN
- ( ) % ASH
- ( ) P.C.B.
- ( ) PURGEABLE COMPOUNDS (601-602)
- ( ) AMENABLE CYANIDE
- ( ) FSCAN (F001-F005 SCAN)

( ) UST PARAMETERS
- ( ) TOTAL LEAD
- ( ) PNA
- ( ) TPH
- ( ) BTEX

( ) TCLP ORGANICS
- ( ) VOLATILES
- ( ) SEMI VOLATILES
- ( ) PESTICIDES
- ( ) HERBICIDES

( ) OIL PACKAGE
- ( ) TOTAL HALOGENS
- ( ) TOTAL ARSENIC
- ( ) TOTAL CADMIUM
- ( ) TOTAL CHROMIUM
- ( ) TOTAL LEAD
- ( ) TOT. ORG. HALOGENS
- ( ) TOT. INORG. HALOGENS
- ( ) 601-602
- ( ) FLASHPOINT
- ( ) P.C.B.

( ) FUEL BLEND PACKAGE
- ( ) BTU'S/lb.
- ( ) SPECIFIC GRAVITY
- ( ) % WATER
- ( ) % CHLORIDE (AS TOT HAL)
- ( ) pH

OTHER:__________

OF CONTAINERS__________ SIZE__________ TYPE: G-GLASS P-PLASTIC

NEED RESULTS FAXED: ○ YES ○ NO

SIGNATURE:__________ DATE/TIME:__________

RECD. AT LAB BY:__________ DATE/TIME:__________

STATUS OF SAMPLE RECEIVED: ○ COLD ○ ROOM TEMP

WAS SAMPLE SEALED: ○ YES ○ NO

Figure 7

IIDWEST ANA TICAL SERVICES, INC.
IETROPOLITA. ENTER FOR HIGH TECHNOLOGY
727 SECOND AVENUE • DETROIT, MI 48201

CHAIN OF CU DY RECORD & SAMPLE ANALYSIS REQUEST

MAS

NO:

PHONE: 313-964-3680
FAX : 313-964-2339

Figure 8

P.O.#: ____ SAMPLE COLLECTOR: ____

JOB #: ____

SHIPPED BY: ____ TEL #: ____

PROJECT: ____

RESULTS TO THE ATTENTION OF: ____ NEED FAXED: YES ☐ NO ☐

ANALYSIS REQUIRED/ METHOD # & DETECTION LIMITS

PAGE ____ OF ____

NORMAL TURNAROUND: ____

RUSH TURNAROUND: ____

G-GLASS
P-PLASTIC

SAMPLE ID	DATE SAMPLED	TIME	LOCATION	SAMPLE MATRIX							CONTAINERS #	SIZE	TYPE	PRESER-VATIVE	LAB USE ONLY MAS # & PHY DESC.

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE/TIME

LAB USE ONLY:
STATUS OF SAMPLE RECEIVED: COLD ☐ ROOM TEMP ☐
SEALED: YES ☐ NO ☐
RECEIVED BY: MAIL ☐ DROP OFF ☐ PICK UP ☐

COMMENTS: (If any special handling is required) ____

WHITE - MAS COPY BLUE - CLIENT COPY YELLOW - TRIPLICATE COPY

Midwest Analytical Services, Inc.
" Where industry comes for answers. "
Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-3680
FAX No.: (313) 964-2339

C:\PW\COCPCKUP
MIDWEST ANALYTICAL CHAIN OF CUSTODY
FOR PICK-UP ONLY

A. CLIENT: ______________________ DATE: ____________

B. NUMBER OF SAMPLES: ____________ N/A P.U.

C. SIZE OF CONTAINERS: TYPE OF CONTAINERS:

________ @ ____________ PLASTIC ____________

________ @ ____________ GLASS ____________

________ @ ____________ METAL ____________

________ @ ____________ OTHER ____________

D: ANALYSES REQUIRED: SEE ATTACHED SEE PERMIT

SPECIFIC: ______________________________

NORMAL/PUSH: ______________________________

RELINQUISHED BY: ______________________ DATE/TIME: ________

REC'D BY: ______________________ DATE/TIME: ________

REC'D AT LAB BY: ______________________ DATE/TIME: ________

COMMENTS: ______________________________

____

____

Figure 9

214 D:\PW\FORMS\ETHICS

Midwest Analytical Services, Inc.

"Where industry comes for answers."

Metropolitan Center for High Technology
2727 Second Avenue
Detroit, Michigan 48201

Phone: (313) 964-368
FAX No.: (313) 964-2339

ETHICS AND DATA INTEGRITY AGREEMENT

I. I, ____, hereby state that I understand the high standards of integrity required of me with regard to the duties I perform and the data I report in connection with my employment at Midwest Analytical Services, Inc.

II. I agree that in the performance of my duties at Midwest Analytical Services, Inc.:

  a. I will not intentionally report data values that are not the true values;

  b. I will not intentionally report the dates and times of data analyses that are not the actual dates and times of data analyses;

  c. I will not intentionally represent another individual's work as my own.

III. I agree to inform Midwest Analytical Services, Inc. of any accidental reporting of non-authentic data by myself or any other employee of Midwest Analytical Services, Inc. in a timely manner.

____
Signature

____
Date

Figure 10

Midwest Analytical Services, Inc.

Quality Assurance Project Plan Compliance Agreement

I, ________________________________ state that I have been given a copy of Midwest Analytical Services Quality Assurance Project Plan.

I further state that I have read this document and I agree to comply with all the procedures listed herein.

I understand that these procedures are subject to change and that I will be given a copy of any sections that are updated and/or revised. It is my responsibility to see that I read these updates thoroughly as I will be expected to comply with all revisions.

I understand that I am responsible for following the QAPP procedures and failure to do so may result in corrective action from the company managers.

____
SIGNATURE

____
DATE

Figure 11

Document Receipt Acknowledgment

Date ______________________

I agree that I have received the following document(s):

Document Name	Date Received	Print Name	Signature

Distributed by ____________________________________

Figure 12

ATTACHMENT 9: RCRA FACILITY INVESTIGATION

Dynecol, Inc.
6520 Georgia Street, Detroit, MI 48211
MID 074 259 565

PURPOSE

The corrective action requirements for the licensee are specified in Part VI of the license. The purpose of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) is to determine the nature and extent of releases of contaminants from all waste management units at the facility, and to gather all necessary data to support determinations regarding further corrective action requirements and the Corrective Measures Study, if applicable.

SCOPE

The RFI consists of three tasks:

I. TASK I: RFI WORK PLAN

The licensee shall prepare an RFI Work Plan. The licensee may reference the RCRA Facility Assessment (RFA) Report for the facility or the hazardous waste management facility operating license application. To the extent that the required information is not provided in the RFA Report, the licensee shall provide it in the RFI Work Plan. During the RFI, it may be necessary to revise the RFI Work Plan to accommodate facility-specific needs. The RFI Work Plan shall include the following:

A. Description of Current Conditions

The RFI Work Plan shall summarize existing information about the facility that will aid in determining the nature and extent of contamination at the facility and beyond the facility boundary. The Description of Current Conditions shall include the following information:

1. A historical description of ownership and operation, and waste and hazardous waste generation, treatment, storage, and disposal activities at the facility;

2. A summary of the facility's regional location, pertinent boundary features, topography, drainage basin, and general facility physiography;

3. A summary of the environmental setting at and adjacent to the facility, including geology, hydrogeology, hydrology, meteorology, wildlife, and vegetative community;

4. A summary of past permits or licenses requested and/or received, any enforcement actions related to releases of contaminants to the environment and the subsequent responses, and a of documents and studies prepared for the facility along with a brief summary of their findings;

5. A summary of all possible source areas of contamination. At a minimum, this should include all regulated units, waste management units identified in Condition VI.C. of the license, any additional waste management units, release areas, and other suspected source areas of contamination including any observed effects to biota. For each potential area of contamination, the RFI Work Plan shall include a summary of the following information:

    a. Location of unit/area;

    b. Current and historic quantities of waste and hazardous wastes;

    c. Hazardous waste or constituents, to the extent known;

    d. Approximate dates or periods of past releases, identification of the materials released, the amount released, the location, and a description of the response actions, including any inspection reports or technical reports generated as a result of the releases;

    e. Available monitoring data and qualitative information on locations and levels of contamination at the facility; and

    f. Habitats and species, including threatened and endangered species, potentially exposed to contaminants, and any known or observed effects of facility contaminants on biota, such as fish kills or other obvious impacts. Habitat description should be based on available information and a field reconnaissance by a trained ecologist. Experts on local flora and fauna should also be consulted.

6. Maps, prepared consistent with the requirements of 40 Code of Federal Regulations (CFR) §270.14 and of sufficient detail and accuracy to allow the location of and the reporting of all current and future work performed at the facility, depicting the following:

    a. General geographic location;

    b. Property lines, with the owners of all adjacent property clearly indicated;

    c. Topography and surface drainage depicting all soil profiles, waterways, wetlands, floodplains, water features, drainage patterns, and surface water areas;

    d. All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;

    e. All waste or hazardous waste treatment, storage or disposal units active after November 19, 1980;

    f. All known past waste or hazardous waste treatment, storage, or disposal areas regardless of their dates of operation;

    g. All known past and present product and waste underground tanks or piping;

    h. Surrounding land uses;

    i. The location of all domestic, municipal production, recovery, oil and gas, and groundwater monitoring wells on-site and within a one-mile radius of the facility boundary. The wells shall be clearly labeled and ground and top of casing elevations and construction details provided (may be included as supplement to the map);

j. Terrestrial habitat cover - types (i.e., vegetation communities) with emphasis on locating natural (undisturbed) areas; and

k. Wildlife nesting and foraging locations for locally "uncommon" mammals, birds, fish, benthos, etc. Threatened and endangered species possibly on or near the facility should be identified as early as possible.

7. A description of all interim measures which were or are being undertaken at the facility. This description shall include:

   a. Objectives of the interim measures: how the measure is mitigating a potential threat to human health, safety, and welfare, and the environment and/or is consistent with and integrated into any long-term solution at the facility;

   b. Design, construction, operation, and maintenance requirements;

   c. Schedules for design, construction, and monitoring; and

   d. Schedule for progress reports.

B. Identification of Potential Corrective Measures Technologies

Based on the information contained in the Description of Current Conditions, the RFI Work Plan shall include:

1. A description of the potential corrective measure technologies that may be used at the facility or beyond the facility boundary to respond to releases of contaminants at or from any waste management unit at the facility; and

2. If applicable, any field, laboratory, bench-scale or pilot-scale data that needs to be collected during the RFI to facilitate the evaluation and selection of the final corrective measure(s), if any, for releases at or from the facility (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of waste, etc.).

C. Project Management Plan

The RFI Work Plan shall include a Project Management Plan which documents the overall management approach to the RFI. The Project Management Plan shall include:

1. A discussion of the technical approach outlining how each waste management unit will be evaluated and investigatory and/or remedial measures will be prioritized based on actual or potential threats to human health, safety, and welfare, and the environment;

2. Schedules of activities;

3. A description of the qualifications of personnel directing the RFI, including contractor personnel;

4. Budget considerations; and

5. Provisions for submittal of periodic progress reports which shall, at a minimum, include:

   a. A description and estimate of the percentage of the RFI completed;

   b. Summaries of all findings;

c. Summaries of all changes made in the RFI during the reporting period;

d. Summaries of all contacts with the public or state government regarding the RFI during the reporting period;

e. Summaries of all problems or potential problems encountered during the reporting period;

f. Actions being taken to rectify problems;

g. Changes in personnel during the reporting period;

h. Projected work for the next reporting period; and

i. Copies of daily reports, inspection reports, laboratory and monitoring data, etc.

D. Facility Investigation Plan

The RFI Work Plan shall include a Facility Investigation Plan which discusses those investigations necessary to: characterize the environmental setting at the facility; define the source of contamination; define the degree and extent of contamination; and identify actual or potential receptors. The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measures alternative(s). The licensee shall characterize the following:

1. Environmental Setting Investigation

The licensee shall collect information to supplement and verify the existing information described in Section I.A.3. of this attachment on the environmental setting at the facility.

a. Hydrogeology

The licensee shall conduct a program as necessary to fully evaluate the hydrogeologic conditions at the facility. This program shall provide the following information, as appropriate:

(1) A description of the regional and facility-specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:

(a) Regional and facility-specific stratigraphy;

(b) Structural geology: description of local and regional structural features;

(c) Depositional history;

(d) Identification and characterization of areas and amount of recharge and discharge;

(e) Regional and facility-specific groundwater flow patterns; and

(f) Temporal variations in the groundwater flow regime.

(2) An analysis of any topographic features that might influence the groundwater fl system;

(3) Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility, including:

(a) Hydraulic conductivity (horizontal and vertical), intrinsic permeability, and porosity (total and effective);

(b) Lithology, grain size, sorting, degree of cementation;

(c) An interpretation of hydraulic interconnection between saturated zones;

(d) The attenuation capacity and mechanisms of the natural earth materials;

(e) Location, depth, and construction details of all groundwater monitoring wells, piezometers, and production wells; and

(f) Boring logs for all groundwater monitoring wells, piezometers, and production wells.

(4) Based on field studies and cores, cross-sections of structural geology and hydrogeologic units which may be part of the migration pathways, identifying:

(a) Sand and gravel deposits in unconsolidated deposits;

(b) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

(c) Zones of higher or lower permeability that might direct or restrict the flow of contaminants;

(d) Aquifers; and

(e) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.

(5) Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring, including:

(a) Water level contour and/or potentiometric maps;

(b) Hydrologic cross-sections showing vertical gradients;

(c) The flow system, including the vertical and horizontal components of flow; and

(d) Any temporal changes in hydraulic gradients due to seasonal or other influences.

(6) A description of man-made influences that may affect the hydrogeology of the facility, identifying:

(a) Active and inactive local water supply and production wells with an approximate schedule of pumping; and

(b) Man-made hydraulic structures (pipelines, French drains, ditches, unlined ponds, septic tanks, National Pollutant Discharge Elimination System (NPDES) outfalls, etc.).

b. Soils

The licensee shall conduct a program as necessary to fully characterize the soil and rock units potentially affected by contaminant release(s). Such characterization shall consider, but not be limited to, the following information, as appropriate:

(1) Extent of contamination;

(2) Depth to groundwater;

(3) Depth to bedrock;

(4) Soil Conservation Service (SCS) and Unified Soil Classification System (USCS) soil classifications, and boring logs;

(5) Surface soil distribution;

(6) Cross-sections showing stratifications or zones which may affect or direct subsurface flow;

(7) Hydraulic conductivity (saturated and unsaturated);

(8) Relative permeability;

(9) Storage capacity;

(10) Shrink-swell potential;

(11) Potential for contaminant transport via erosion;

(12) Soil sorptive capacity;

(13) Cation exchange capacity;

(14) Soil organic content;

(15) Soil pH;

(16) Bulk density;

(17) Porosity;

(18) Particle size distribution;

(19) Mineral content;

(20) Moisture content;

(21) Effect of stratification on unsaturated flow;

(22) Infiltration;

(23) Evapotranspiration; and

(24) Vertical flow rate.

c. Surface Water and Sediment

The licensee shall conduct a program as necessary to fully characterize the surface water bodies in the vicinity of the facility that may be affected by releases from the facility. Such characterization shall include, but not be limited to, the following activities and information, as appropriate:

(1) Description of the temporal and permanent surface water bodies including:

(a) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature or chemical stratification and volume;

(b) For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies;

(c) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;

(d) For wetlands: available delineations;

(e) Any containment measures such as levees, concrete lining, etc.; and

(f) Drainage patterns.

(2) Description of the chemistry of the natural surface water and sediments, including pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations; and

(3) Description of sediment characteristics, including the deposition area, thickness profile, physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

d. Air

The licensee shall provide information characterizing the climate in the vicinity of the facility. This information shall include, but not be limited to, as appropriate:

(1) Annual and monthly rainfall averages;

(2) Monthly temperature averages and extremes;

(3) Wind speed and direction;

(4) Climate extremes that have been known to occur in the vicinity of the facility, and the frequency of occurrence; and

(5) A description of topographic and man-made features which affect air flow and emission patterns, including:

(a) Ridges, hills, mountain areas, or valleys;

(b) Surface water bodies;

(c) Wind breaks and forests; and

(d) Buildings.

2. Source Characterization

The licensee shall collect analytical data as necessary to fully characterize the wastes and areas where wastes have been placed, collected, or removed. This shall include, but not be limited to, qualification of the following specific characteristics at each source area and documentation of the procedures used in making the determinations:

a. Unit/Disposal Area Characteristics:

(1) Location of unit/disposal area;

(2) Type of unit/disposal area;

(3) Design features;

(4) Operating practices (past and present);

(5) Period of operation;

(6) Age of unit/disposal area;

(7) General physical conditions;

(8) Method used to close the unit; and

(9) History of releases.

b. Waste Characteristics:

(1) Type of waste placed in the units;

(a) Hazardous classification;

(b) Quantity; and

(c) Chemical composition.

(2) Physical and chemical characteristics; and

(a) Physical form (solid, liquid, gas);

(b) Physical description;

(c) pH;

(d) General chemical class (e.g., acid, solvent);

(e) Density;

(f) Boiling point;

(g) Viscosity;

(h) Solubility in water;

(i) Cohesiveness of the waste;

(j) Vapor pressure; and

(k) Flash point.

(3) Migration and dispersal characteristics of the waste.

(a) Sorption;

(b) Biodegradability;

(c) Bioconcentration;

(d) Biotransformation;

(e) Photodegradation rates;

(f) Hydrolysis rates; and

(g) Chemical transformations.

3. Contamination Characterization

The licensee shall collect analytical data as necessary on groundwater, soils, surface water, sediment, subsurface gas and air contamination at the facility and in the vicinity of the facility. These data shall be sufficient to define the extent, origin, direction, and rate of movement of plumes of contamination. Data shall include the time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. In developing strategies for collecting this information under Sections I.D.1. and I.D.2. of this attachment, the licensee shall address the following types of contamination at the facility, as appropriate:

a. Groundwater Contamination

The licensee shall conduct a groundwater investigation as necessary to fully characterize any plumes of contamination at or originating from the facility. This investigation shall, at a minimum, provide the following information:

(1) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;

(2) The horizontal and vertical direction of contaminant movement;

(3) The velocity of contaminant movement;

(4) The horizontal and vertical concentration profiles of 40 CFR Part 261, Appendix IX constituents in the plume(s);

(5) An evaluation of factors influencing the plume movement; and

(6) An extrapolation of future contaminant movement.

The licensee shall document the procedures used in making the above determinations.

b. Soil Contamination

The licensee shall conduct an investigation as necessary to fully characterize the contamination of the soil and rock units in vicinity of the contaminant release(s) at or from the facility. The investigation shall, at a minimum, provide the following information:

(1) A description of the vertical and horizontal extent of contamination;

(2) A description of contaminant and soil chemical properties within the source area and contaminant plume that might affect contaminant migration and transformation;

(3) Specific contaminant concentrations;

(4) The velocity and direction of contaminant movement; and

(5) An extrapolation of future contaminant movement.

The licensee shall document the procedures used in making the above determinations.

c. Surface Water and Sediment Contamination

The licensee shall conduct a surface water investigation as necessary to fully characterize contamination in surface water bodies resulting from contaminant releases at or from the facility. The investigation shall, at a minimum, provide the following information:

(1) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility and the extent of contamination in underlying sediments;

(2) A description of the chemical, physical, and biological properties of the contaminated surface waters and sediments that might affect contaminant movement;

(3) Specific contaminant concentrations;

(4) The velocity and direction of contaminant movement; and

(5) An extrapolation of future contaminant movement, taking into account times of flood.

The licensee shall document the procedures used to make the above determinations.

d. Air Contamination

The licensee shall conduct an investigation as necessary to fully characterize the particulate and gaseous contaminants released into the atmosphere at or from the facility. This investigation shall, at a minimum, provide the following information:

(1) The chemical and physical composition of the contaminants released;

(2) The rate and amount of release; and

(3) A description of the contaminant dispersion.

e. Subsurface Gas Contamination

The licensee shall conduct an investigation as necessary to fully characterize subsurface gases emitted from contaminants. This investigation shall, at a minimum, provide the following information:

(1) A description of the horizontal and vertical extent of subsurface gases;

(2) The chemical composition of the gases being emitted;

(3) The rate, amount, and density of the gases being emitted; and

(4) Horizontal and vertical concentration profiles of the subsurface gases emitted.

The licensee shall document the procedures used in making the above determinations.

4. Potential Receptors Identification

The licensee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analyses of biological samples may be needed. Data on observable effects in ecosystems or from bioassays may also be needed. The following characteristics shall be identified, as appropriate:

a. Local uses and possible future uses of groundwater:

(1) Type of use (e.g., municipal or residential drinking water source, industrial, etc.); and

(2) Location of groundwater users, including wells and discharge areas.

b. Local uses and possible future uses of surface waters draining the facility, including:

(1) Domestic and municipal;

(2) Recreational;

(3) Fish and wildlife propagation;

(4) Agricultural; and

(5) Industrial.

c. Authorized or unauthorized human use of, or access to, the facility and adjacent lands, including, but not limited to:

(1) Recreation;

(2) Agriculture;

(3) Residential;

(4) Commercial;

(5) Zoning; and

(6) Relationship between population locations and prevailing wind direction.

d. A demographic profile of the people who use or have access to the facility and adjacent land; including, but not limited to: age, sex, and sensitive subgroups.

e. A description of the biota in surface water bodies, including benthic macroinvertebrates and fish communities on, adjacent to, or affected by the facility. The aquatic biota expected in these water bodies in the absence of facility-related contamination, based on physical habitat characteristics, should also be described.

f. A description of terrestrial habitats on or potentially affected by the facility and a description of potential terrestrial animal receptors seen or expected in those habitats, including birds, mammals, amphibians, and reptiles.

g. A description of endangered or threatened species at or near the facility.

E. Quality Assurance/Quality Control Plan

The RFI Work Plan shall include a Quality Assurance/Quality Control (QA/QC) Plan to document all monitoring, including sampling procedures, field measurements, and sample analysis, performed during the RFI. The QA/QC Plan shall be designed to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QA/QC Plan shall include, but not be limited to:

1. Pages with the facility name, section number, revision number, date, and section page number on each page.

2. A table of contents which includes:

a. A list of each section of the QA/QC Plan;

b. A list of appendices; and

c. A list of any tables and figures.

3. Project Description

A project description which defines the project objectives and how the project will be designed to obtain the information necessary to meet the project objectives. The project description shall include:

a. An introduction which contains a succinct description of the project, including a brief statement regarding the phase(s) of the work and general objectives of the RFI;

b. A discussion of important facility contaminants or target compounds, including required detection limits for RFI and subsequent corrective action;

c. The project objectives, including:

(1) Specific objectives;

(2) An outline of the usage of all data, including any data generated from field screening and/or field measurements. These data usages include, but are not limited to, the following:

(a) Qualitative or semi-quantitative analyses for selection of sample and/or sampling locations;

(b) Definition of extent of environmental contamination;

(c) Data for remedial action alternatives;

(d) Determination of hazardous waste characteristics for remedial removals; and

(e) Protection of public health.

(3) Data quality objective (DQO) summaries from RCRA DQO preparation guidance.

d. A description of the sampling and monitoring network design and rationale. This may be referenced to readily available work and sampling plans. The description shall include:

(1) Diagrams or facility maps of sampling locations;

(2) Rationale for selected sampling locations; and

(3) Summary table listing matrices, parameters, both field and laboratory, and their frequency of collection. The field parameters may include field screening, field measurements, and hydrogeologic investigations, as applicable. The sample matrices and parameters should be listed in groups for a remedial activity site as follows:

(a) On-site contaminated materials. These types of sampling and analyses are often done to determine disposal methods.

(b) Ambient monitoring of air, groundwater, surface water, soils, drinking water, river sediments, and fish. Specifications of filtered or unfiltered sample aliquot for groundwater and surface water must be included as part of the definition of parameters. These types of analyses usually are intended to measure the extent of environmental contamination and to assess public health risks.

e. A description of dates anticipated for start, milestones, and completion of the project, and sampling and monitoring activities. A milestone table or a bar chart consisting of project tasks and time lines is appropriate.

4. Project Organization and Responsibility

A description and table, chart, or figure of the overall project organization and lines of responsibility for quality assurance organization, showing how execution and direct management of the technical and administrative aspects of this project have been assigned as shown in the following table.

Tasks		Responsible Organization/Personnel
a.	Final review and approval of QA/QC Plan	Department
b.	QA review and approval of reports, standard operating procedures (SOPs), and field activities, and audits of reports, procedures, and activities for identifying, controlling nonconformance for corrective actions	Licensee
c.	Evidence audits of field records	Licensee
d.	Data assessment	Licensee
e.	Performance and system audits of field activities and laboratories	Department
f.	Analysis	Licensee

5. QA Objectives

A description of the QA objectives of the project in terms of precision, accuracy, completeness, representativeness, and comparability for both field activities (sampling, measurements, and screening) and laboratory analyses, including the project acceptance limits and means to achieve these QA objectives.

Trip blanks are required at a frequency of one per cooler in which aqueous matrix volatile organic compound samples are shipped. Field blanks are required for all aqueous matrix parameters (e.g., at a frequency of one for every ten or fewer investigative samples). Field duplicates are also required for all parameters and matrices (e.g., at a frequency of one for every ten or fewer investigative samples). These field QC samples must be treated as regular investigative samples concerning sample volume, containers, and preservation. Field duplicates must not be composited prior to placing them in the sample containers.

6. Sampling Procedures

A detailed description of the sampling procedures, including:

a. Procedures, criteria, or guidelines used for sampling location and sampling frequency selection, including background sampling locations and frequency;

b. Procedures for static water level measurement for groundwater sampling. The procedures shall address the measurement point, measurement method, and level of accuracy;

c. Procedures for well purging for groundwater sampling. The procedures shall address purge volume determination calculations, purge volume measurement, purge method, and fate of purge water;

d. Procedures, criteria, or guidelines for sample collection of each sample matrix or parameters. The procedures shall address the sampling method(s), the method(s) of operation, and compatibility with the parameters analyzed;

e. Sample containers, reagents, preservatives, and holding time requirements;

f. Special conditions for the preparation of field measured parameters (e.g., pH and conductivity), including sampling containers, sampling methods, and time requirements;

g. Decontamination procedures;

h. Procedures for preparing and collecting trip blank samples, field blank samples, and field duplicate samples;

i. Procedures for sample packaging, handling, and shipment, including time considerations and field filtration requirements;

j. Documentation of sampling activities, including forms, notebooks, bound logbook(s), and procedures to record sample history, sampling conditions, etc., and analyses to be taken; and

k. Chain-of-custody procedures for field activities, including sample labels and chain-of-custody forms.

7. Calibration Procedures and Frequency

A description of the calibration procedures and their frequency for both field and laboratory instruments. The description shall include the following:

a. Field instruments:

(1) Calibration standards and devices;

(2) Initial calibration, including multilevel calibration for determination of usable range;

(3) Continuing calibration check and acceptable control limits; and

(4) Conditions triggering recalibration.

b. Laboratory instruments:

(1) Calibration standards and devices;

(2) Initial calibration for each instrument;

(3) Initial calibration verification;

(4) Continuing calibration check; and

(5) Conditions to trigger the recalibration.

8. Analytical Procedures

Methods from "Test Methods for Evaluating Solid Waste; Physical/Chemical Methods," U.S. EPA Publication SW-846, Third Edition, and its Updates I (July 1992), II (September 1994), IIA (August 1993), and IIB (January 1995) are preferred. Other U.S. EPA methods from the Clean Water Act (CWA), Superfund Contract Laboratory Program (CLP), Clean Air Act Program, or Safe Drinking Water Act (SDWA) are acceptable when appropriate for the constituent of interest. The following shall be addressed in the QA/QC Plan:

a. For SW-846 analytical methods, the method for analysis (by number).

b. For parameters to be analyzed by methods other than those found in SW-846, the following shall be provided:

(1) For non-U.S. EPA approved methods, an SOP.

(2) For SW-846 or other U.S. EPA approved methods that are modified (i.e., Appendix IX or facility-specific contaminants), an SOP.

(3) A reference to the method manual and procedure number(s).

c. Chain-of-custody procedure for field and laboratory activities, including sample receiving, log-in, storage, tracking of custody-transfer during sample preparation and analysis, and maintenance of chain-of-custody records.

9. Internal QC Checks

A description of the specific QC check methods to be followed for both laboratory and field activities. Items to be considered include the following:

a. Field Measurements and Screening:

(1) Replicate analyses;

(2) Spike sample analyses;

(3) Blanks (trip blank, field blank, etc.); and

(4) QC samples.

b. Laboratory Analyses:

(1) Method blanks;

(2) Reagent/preparation blanks;

(3) Matrix spike and matrix spike duplicates;

(4) Internal standards;

(5) Surrogate standards; and

(6) Laboratory duplicate/replicate analysis.

10. Data Reduction, Validation, and Reporting

A description of the data reduction, validation, and reporting, including:

a. Methods to be used for reducing both field and laboratory data.

b. The criteria, guidelines, and procedures to be used for data validation shall be described. This function must be performed independently of the laboratory.

c. The data reporting format, including all forms and reporting units, shall be described. The description shall include the listing of data package contents (deliverables from the laboratory).

11. Performance and System Audits

A description of the procedures and mechanisms used to ensure that the sampling and analysis are performed per specifications of the QA/QC Plan and that measurement data meet project requirements. A description of the internal audit for the field activity, as well as laboratory analysis, shall be provided as follows:

a. The responsible party for the audits;

b. The frequency of these audits to be conducted; and

c. Methods/procedures to be used for conducting the audits.

12. Preventive Maintenance

A description of the preventive maintenance procedures to be used for both field and laboratory instruments.

13. Procedures Used to Assess Data Precision, Accuracy, and Completeness

The procedures and equations to be used to aid in assessing the accuracy and precision of analytical data, and completeness of data collection shall be documented or referenced.

14. Correction of QA/QC Problems

The QA/QC plan shall address how QA/QC problems will be assessed and corrected.

15. Laboratory QA/QC Reports

QA/QC reports shall be done on a periodic basis to ensure that problems, if any, identified during sampling and/or analysis are investigated, and corrective actions are properly taken.

F. <u>Data Management Plan</u>

The RFI Work Plan shall include a Data Management Plan to document and track RFI data and results. The Data Management Plan shall identify and set up data documentation materials and procedures, project file requirements, and progress reporting procedures. The Data Management Plan shall also provide the format to be used to present the raw data and conclusions of the investigation. The Data Management Plan shall include the following information:

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis ID number;

e. Property or component measured; and

f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data;

b. Results for each medium, or for each contaminant monitored;

c. Data reduction for statistical analysis;

d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and

e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three-dimensional graphs, etc.):

a. Display sampling location and sampling grid;

b. Indicate boundaries of sampling area and areas where more data are required;

c. Display levels of contamination at each sampling location;

d. Display geographical extent of contamination;

e. Display contamination levels, averages, and maxima;

f. Illustrate changes in concentration in relation to distance from the source, time, depth or other parameters; and

g. Indicate features affecting intramedia transport and show potential receptors.

G. Health and Safety Plan

The RFI Work Plan shall include a Health and Safety Plan which covers activities to be conducted during the RFI. The Health and Safety Plan shall be submitted for informational purposes and not for specific approval by the Department of Environmental Quality (Department). The Health and Safety Plan shall be consistent with all applicable U.S. EPA, Occupational Safety and Health Administration, National Institute for Occupational Safety and Health, state, and local requirements and regulations, and the conditions of this license. The Health and Safety Plan shall include:

1. A facility description including availability of resources such as roads, water supply, electricity, and telephone service;

2. A description of the known hazards and an evaluation of the risks associated with each activity to be conducted;

3. A list of key personnel and alternates responsible for site safety, response operations, and protection of public health;

4. A map delineating the work area;

5. A description of the protective clothing or other protective items to be worn or used by personnel in the work area;

6. Information regarding the procedures to be used to control site access;

7. A description of the decontamination procedures for personnel and equipment;

8. Site emergency procedures;

9. Information regarding emergency medical care needed for injuries and toxicological problems;

10. A description of requirements for an environmental surveillance program;

11. A description of the routine and special training required for response personnel; and

12. Information regarding the procedures for protecting workers from weather-related problems.

H. Public Involvement Plan

The RFI Work Plan shall include a Public Involvement Plan for dissemination of information to the public regarding RFI activities and results. The Public Involvement Plan shall address information regarding open houses, informal meetings, fact sheets, other methods of communication, and information repositories. The Public Involvement Plan shall include a schedule for all public involvement activities.

I. RFI Final Report Outline

The RFI Work Plan shall include an outline of the contents of the RFI Final Report. The RFI Final Report shall include the following:

1. A summary of all investigations conducted during the RFI;

2. An analysis of all data developed during the RFI;

3. A description of the nature and extent of contamination, both qualitative or quantitative, at or from the facility, including:

    a. The release source(s);

    b. The release mechanism(s);

    c. Specific contaminant concentrations and the distribution of contamination;

    d. Pathways of contamination migration; and

    e. Actual or potential receptors, including exposure routes.

4. Identification of all relevant and applicable standards, including background values, for the protection of human health, safety, and welfare, and the environment, and comparison of those standards to the extent of contamination found at the facility; and

5. Recommendations of which waste management units require a corrective measure study, and the identification of those corrective action alternatives that may be further investigated.

II. TASK II: RFI IMPLEMENTATION

The RFI shall be implemented in accordance with the terms and schedules in the RFI Work Plan, as approved by the Department.

III. TASK III: RFI REPORTING

A. The licensee shall prepare and submit progress reports in accordance with the requirements of Section I.C.5. of this attachment and Conditions VI.E.6. and VI.K. of the license.

B. The licensee shall prepare and submit a RFI Final Report in accordance with Section I.I and Conditions VI.E.4., VI.E.5., and VI.K. of the license.

Attachment 10: Corrective Measures Study

ATTACHMENT 10: CORRECTIVE MEASURES STUDY

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MID 074 259 565

PURPOSE

The corrective action requirements for the licensee are specified in Part VI of the license. The purpose of the Corrective Measures Study (CMS) is to identify, screen, and evaluate potential corrective measures alternatives for releases of contaminants from waste management units at the facility.

SCOPE

The CMS consists of three tasks:

I. TASK I: CMS WORK PLAN

If required under Condition VI.H. of the license, the licensee shall prepare a CMS Work Plan. The licensee may elect either to identify and screen a number of potential corrective measures alternatives prior to evaluating a smaller number of potential alternatives or, based on justification and prior approval by the Department of Environmental Quality (Department), delete the screening step and proceed with evaluation of the expected alternative(s). The CMS Work Plan shall include the following:

A. Introduction

A description of the CMS Work Plan and summary of the project, including corrective action objectives.

B. Findings of the RCRA Facility Investigation (RFI)

A brief summary of the findings of the RFI, highlighting the description of the nature and extent of contamination, and the identification of waste management units requiring corrective measures. Any updates to facility conditions since the RFI was conducted, including implementation of interim measures, shall be provided in this section of the CMS Work Plan.

C. Media Cleanup Standards

An outline of the proposed facility-specific media cleanup levels. The media cleanup levels shall be based on information gathered during the RFI and the cleanup criteria specified in R 299.9629. The licensee shall recommend final media cleanup standards when the final corrective measure is selected.

D. Identification of Corrective Measures Alternative(s)

Identification of the potential corrective measures alternative(s) for each affected media based on the media cleanup levels and an analysis of available technologies. The licensee shall rely on sound engineering practice to determine which of the identified technologies appear most suitable for the facility. Technologies can be combined to form the overall corrective action alternative(s). The corrective measures alternative(s) developed should represent a workable number of options that appear to adequately address all facility problems and corrective action objectives. The reasons for excluding technologies that might be feasible up front shall be documented in the CMS Work Plan.

E. Screening of Corrective Measures Alternative(s)

A description of the screening process, including a discussion of the corrective measures alternative(s) identified and screened and documentation of the reasons for eliminating any technology based on the waste characteristics, facility characteristics, and technology limitations. The licensee may screen the corrective measures alternative(s) identified under Section I.D. of this attachment to eliminate those that may prove infeasible to implement, or that rely on technologies that are unlikely to, or do not, achieve the media cleanup standards within a reasonable period of time. The screening process shall include a review of facility data to identify conditions that may limit or promote the use of certain technologies and focus on eliminating those technologies which have severe limitations for a given set of waste or facility-specific conditions or have inherent technology limitations. During the screening process, the level of technological development, performance record, inherent construction, and operation and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process.

F. Evaluation of Corrective Measures Alternative(s)

A description of how each corrective measures alternative that passes through the initial identification and screening process shall be evaluated for compliance with the corrective action objectives. The evaluation shall consider technical, environmental, human health, safety, and welfare, and institutional concerns as outlined below. In addition, the evaluation shall consider the cost for each corrective measures alternative.

1. Evaluation Criteria

The evaluation criteria shall include the following:

a. Technical:

An evaluation of each corrective measures alternative based on performance, reliability, implementability, and safety.

(1) Performance shall be based on the effectiveness and useful life of the measure:

(a) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, separation, removal, destruction, or treatment. The effectiveness of each measure shall be determined either through design specifications or by performance evaluation. Any specific waste or facility characteristics which could impede effectiveness shall be considered; and

(b) Useful life is defined as the length of time the level of effectiveness can be maintained. Each measure shall be evaluated in terms of the projected service lives of its components.

(2) Information on the reliability of each corrective measures alternative, including the operation and maintenance requirements and its demonstrated reliability:

(a) Operation and maintenance requirements include the frequency and complexity of the operation and maintenance. Technologies requiring frequent or complex operation and maintenance should be regarded as less reliable. The availability of labor and materials to meet these requirements shall also be considered; and

(b) Demonstrated reliability is a way of estimating the risk and effect of failure. The licensee should evaluate the technology's reliability under analogous facility conditions, its flexibility to deal with uncontrollable changes at the site, and the impact of a failure.

(3) A description of the implementability of each corrective measures alternative, including the administrative actions necessary to implement each alternative, the ease of installation, and the time required to achieve a given level of response:

(a) Constructability is determined by both internal and external facility conditions (e.g., location, depth to water table, availability of utilities, need for special permits, etc.). The licensee shall evaluate what measures will facilitate construction under these conditions; and

(b) The time it takes to implement a corrective measure and the time it takes to see beneficial results.

(4) Safety information for each corrective measures alternative, including threats to the safety of nearby communities and environments, as well as to workers during the implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

b. Environmental

An assessment of each corrective measures alternative to determine its short- and long-term beneficial and adverse effects on the environment. Each alternative will be evaluated for its impact on habitat types and plant and animal receptors located in, adjacent to, or affected by the facility. Receptor impacts should include those occurring at the individual level (e.g., mortality, growth and reproductive impairments) and those occurring at higher levels of biological organization (i.e., at population, community, and ecosystem levels). The assessment should include proposed measures for mitigating adverse impacts.

c. Human Health, Safety, and Welfare

An assessment of each corrective measures alternative in terms of the extent to which mitigates short- and long-term potential or actual exposure to any residual contaminatio and protects human health, safety, and welfare both during and after implementation of the corrective measure. Each corrective measures alternative will be evaluated to determine the level of contaminants through various media, and the reduction over time.

The residual levels from each corrective measures alternative must be compared with the media cleanup standards.

d. Institutional

An assessment of the institutional needs for each corrective measures alternative, including the ability of the alternative to control the source of the release(s) so as to substantially reduce or eliminate, to the extent practical, further releases or other risks. Additionally, the effects of federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operations, and timing of each corrective measures alternative shall be addressed.

2. Cost Estimate

A description of how a preliminary estimate of the cost of each corrective measures alternative, and for all phases of the action, shall be developed. The cost estimate shall include both capital, and operation and maintenance costs, as appropriate.

a. Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs.

(1) Direct capital costs include, but are not limited to, the following:

(a) Construction costs: materials, labor, and equipment required to install the corrective measure;

(b) Equipment costs: treatment, containment, disposal and/or service equipment necessary to implement the action;

(c) Site development costs: expenses associated with the purchase of land and development of existing property; and

(d) Buildings and service costs: process and non-process buildings, utility connections, purchased services, and disposal costs.

(2) Indirect capital costs include, but are not limited to, the following:

(a) Engineering expenses: costs of administration, design, construction supervision, drafting, and testing of the corrective measure;

(b) Legal fees and license or permit costs;

(c) Startup and shakedown costs; and

(d) Contingency allowances: funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

b. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. Consideration shall be given to the following operation and maintenance cost components:

(1) Operating labor costs: wages, salaries, training, overhead, and fringe benefits associated with the labor necessary for continued operation;

(2) Maintenance materials and labor costs: costs for labor, parts, and other resource required for routine maintenance of facilities and equipment;

(3) Auxiliary materials and energy: costs of items such as chemicals, electricity, water and sewer service, and fuel;

(4) Purchased services: sampling costs, laboratory fees, and professional fees;

(5) Disposal and treatment costs: costs of transporting, treating and disposing of waste materials and residues;

(6) Administrative costs;

(7) Insurance, taxes and licensing costs; and

(8) Other costs: items that do not fit into any of the above categories.

G. Recommendation of Corrective Measures Alternative(s)

A detailed description of how the final corrective measures alternative recommendation(s) for each waste management unit at the facility will be made. The recommendation(s) shall be based on the overall corrective action objectives using technical, environmental, human health, safety, and welfare, and institutional criteria. The recommendation(s) shall include summary tables and supporting rationale which allow the corrective measures alternative(s) to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. At a minimum, the following criteria will be used to justify the final corrective measures alternative(s):

1. Technical

a. Performance - corrective measures alternative(s) which are most effective at performing their intended functions and maintaining the performance over extended periods of time shall be given preference;

b. Reliability - corrective measures alternative(s) which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated shall be given preference;

c. Implementability - corrective measures alternative(s) which can be constructed and operating to reduce levels of contamination to attain or exceed applicable cleanup standards in the shortest period of time shall be preferred; and

d. Safety - corrective measures alternative(s) which pose the least threat to the health, safety, and welfare of nearby residents and environments, as well as workers, during implementation shall be preferred.

2. Environmental

The corrective measures alternative(s) posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment shall be favored.

3. Human Health, Safety, and Welfare

The corrective measures alternative(s) shall comply with existing federal and state standards for the protection of human health, safety, and welfare. Corrective measures alternative(s) which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time shall be preferred.

4. Institutional

   The corrective measures alternatives shall comply with applicable institutional requirements.

H. Reporting Requirements

1. Provisions for the submittal of periodic progress reports which shall, at a minimum, include:

   a. A description and estimate of the percentage of the CMS completed;

   b. Summaries of all findings, including the results of any pilot studies;

   c. Summaries of all changes made in the CMS during the reporting period;

   d. Summaries of all contacts with representatives of the local community, public interest groups, or state government during the reporting period;

   e. Summaries of all contacts made regarding access to off-site property;

   f. Summaries of all problems or potential problems encountered during the reporting period;

   g. Actions being taken to rectify problems;

   h. Changes in relevant personnel during the reporting period;

   i. Projected work for the next reporting period; and

   j. Copies of daily reports, inspection reports, laboratory and monitoring data, etc.

2. An outline of the contents of the CMS final report. The CMS final report shall include the following:

   a. An updated description of the findings of the RFI, highlighting the nature and extent of the contamination as documented by the RFI final report;

   b. Recommended media cleanup standards for corrective measures for each waste management unit at the facility;

   c. A summary of the results of the screening of corrective measures alternative(s);

   d. A description of the evaluation of corrective measures alternative(s) using the criteria in Section I.F. of this attachment. The description shall include summary tables which allow the corrective measures alternative(s) to be understood easily. Comparisons of health risks, environmental effects, and other pertinent factors among the corrective measures alternative(s) evaluated shall be highlighted. Information on all evaluated potential corrective measures alternative(s) shall also be presented;

   e. A description and justification of the recommended corrective measures for each waste management unit at the facility, including recommended media cleanup standards that can be achieved by the corrective measures alternative(s), using the criteria in Section I.G. of this attachment;

   f. A description of design and implementation considerations for the recommended corrective measures, including:

(1) Special technical problems;

(2) Additional engineering data required;

(3) Permits and regulatory requirements;

(4) Access, easements, rights-of-way;

(5) Health and safety requirements;

(6) Community relations activities; and

(7) Long-term monitoring requirements to assess attainment of media cleanup standards (including ecological integrity).

g. The preliminary cost estimates and supporting documentation for the recommended corrective measures alternative(s), including:

(1) Capital cost estimates; and

(2) Operation and maintenance cost estimates.

h. Projected schedule for implementation of the recommended corrective measures alternative(s).

I. Schedule for Completion of the CMS

The CMS Work Plan shall include a schedule for completion of all tasks described in Section I of this attachment.

II. TASK II: CMS IMPLEMENTATION

The CMS shall be implemented in accordance with the terms and schedules in the CMS Work Plan, as approved by the Department.

III. TASK III: CMS REPORTING

A. The licensee shall prepare and submit progress reports in accordance with the requirements of Section I.H. of this attachment and Conditions VI.H.6. and VII.K. of the license.

B. The licensee shall prepare and submit a CMS final report in accordance with the requirements of Section I.H. of this attachment and Conditions VI.H.4., VI.H.5., and VI.K. of the license.

ATTACHMENT 11: CORRECTIVE MEASURES IMPLEMENTATION

Dynecol, Inc.
6520 Georgia Avenue, Detroit, MI 48211

MID 074 259 565

PURPOSE

The corrective action requirements for the licensee are specified in Part VI of the license. The purpose of Corrective Measures Implementation (CMI) is to design, construct, operate, refine, maintain, and monitor the performance of the corrective measures approved by the Department of Environmental Quality (Department) to protect human health, safety, welfare, and the environment from releases of contaminants from any waste management units at the facility. The CMI shall include the development and implementation of several plans which require concurrent preparation. It may be necessary to revise the plans as the work is performed to accommodate facility-specific needs.

SCOPE

The CMI consists of three tasks:

I. TASK I: CMI WORK PLAN

The licensee shall prepare a CMI Work Plan. The CMI Work Plan shall include the following:

A. <u>Program Management Plan</u>

The CMI Work Plan shall include a Program Management Plan which provides a summary of the project and its objectives, and documents the overall management strategy for performing the design, construction, operation, maintenance, and monitoring of corrective measures. The Program Management Plan shall document the responsibility and authority of all organizations and key personnel involved with the CMI. The Program Management Plan shall include:

1. A personnel organizational chart and description of the responsibilities and qualifications of key personnel directing the CMI, including contractor personnel;

2. Provisions for submittal of periodic progress reports during the construction phase and semi-annual progress reports for operation and maintenance (O&M) activities. The progress reports shall, at a minimum, include:

a. A description and estimate of the percentage of the CMI completed;

b. Summaries of all findings;

c. Summaries of all changes made in the CMI during the reporting period;

d. Summaries of all contacts with representatives of the public or state government regarding the CMI during the reporting period;

e. Summaries of all significant problems or potential problems encountered during the reporting period;

f. Actions being taken to rectify problems;

g. Changes in personnel during the reporting period;

h. Projected work for the next reporting period; and

i. Copies of daily reports, inspection reports, laboratory and monitoring data, etc.

B. Design Plans and Specifications

The CMI Work Plan shall include clear and comprehensive design plans and specifications to implement corrective measures at the facility, as defined in the Corrective Measure Study (CMS). The design plans and specifications shall include:

1. Discussion of the design criteria, including specific performance requirements for each major component of the corrective measures and the overall corrective measures;

2. Discussion of the design strategy and the design basis, including:

   a. Compliance with all applicable and relevant environmental and public health standards; and

   b. Minimization of negative environmental and public impacts.

3. Discussion of any additional technical factors of importance, including:

   a. Use of currently acceptable environmental control measures and technology;

   b. The constructability of the design; and

   c. Use of currently acceptable construction practices and techniques.

4. Description of assumptions made and detailed justification of these assumptions;

5. Discussion of the possible sources of error and reference to possible operation and maintenance problems;

6. Detailed plans, diagrams, and drawings, including the following, as applicable:

   a. General site plans;

   b. Process flow diagrams, both qualitative and quantitative;

   c. Structural drawings, including plan views, elevations, sections, and supplementary views;

d. Piping and instrumentation;

e. Mechanical drawings;

f. Electrical drawings;

g. Site preparation and field work standards;

h. Equipment lists; and

i. Detailed specifications for equipment and materials.

General correlation between plans, diagrams, and drawings, and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the technical specifications, the licensee shall coordinate and cross-check the specifications and plans, diagrams and drawings.

7. Tables listing equipment and specifications;

8. Tables giving material and energy balances; and

9. Appendices, including:

   a. Tabulations of significant design data used in design effort;

   b. Sample calculations (present and explain one example for significant or unique design calculations);

   c. Derivation of equations essential to understanding the report; and

   d. Results of laboratory and field tests.

C. Construction Plan

The CMI Work Plan shall include a Construction Plan based on the final design plans. The Construction Plan shall include:

1. A Construction Quality Assurance (CQA) Program to ensure, with a reasonable degree of certainty, that completed corrective measures meet or exceed all design criteria, plans, and specifications;

2. A description of all inspection activities, including observations and tests, that will be used to monitor the construction and installation of the components of the corrective measures, and verify compliance with all environmental and health and safety requirements. The plan shall include the scope and frequency of each type of inspection. The inspections shall include, but not be limited to, pre-construction inspections, air quality and emissions monitoring records inspections, waste disposal records inspections, and final walk-through inspection of the project site;

3. A quality assurance/quality control (QA/QC) plan for all of the sampling and monitoring activities needed for QA/QC control or other construction related purposes. The QA/QC plan shall include the sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems;

4. Reporting requirements for construction activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures

reports, and final documentation. Provisions for the evaluation, documentation, and final storage of all records shall also be specified;

5. Procedures to address the need for changes to the design or specifications to address unforeseen problems encountered in the field, including provisions for notifying the Department;

6. Provisions for notification of the Department in the event of a construction emergency, including verbal notification within 24 hours of the event, followed by written notification within five days of the event. The written report shall specify the nature of the emergency, the response action, and potential impacts to human health, safety, welfare, and the environment; and

7. Procedures to be implemented if unforeseen events prevent the corrective measures construction, including provisions for notifying the Department.

D. <u>Operation and Maintenance Plan</u>

The CMI Work Plan shall include an O&M Plan to cover both implementation and long-term maintenance and monitoring of the corrective measures. The O&M Plan shall include:

1. A description of the training process for O&M personnel. The description shall include the technical specifications for treatment systems, the contractor requirements for providing appropriate service visits to supervise the installation, adjustment, start-up, and operation of treatment systems, and training covering operational procedures once the start-up has been successfully accomplished;

2. A description of system start-up procedures, including any operational testing;

3. A description of normal O&M procedures, including tasks for operation, tasks for maintenance, prescribed treatment or operation conditions, and a schedule showing the frequency of each O&M task;

4. A description of routine sampling, monitoring, and laboratory testing to ensure effective operation and maintenance of the corrective measures and the required QA/QC;

5. A description of the equipment, including equipment specifications, monitoring components, maintenance requirements, and replacement schedule for equipment and installed components;

6. A description of the process and criteria for determining when corrective measures have achieved goals and when maintenance and monitoring may cease;

7. A description and analysis of potential operating problems and system breakdowns, including sources of information regarding problems, and common and/or anticipated remedies. In the event of a major breakdown and failure of the corrective measures, verbal notification to the Department is required within 24 hours of the event, followed by written notification within five days of the event. The written report shall specify the nature of the emergency, the response action, and potential impacts to human health, safety, welfare, and the environment;

8. A description of alternate O&M procedures to be implemented in the event of failure of the corrective measures to prevent a release or threatened release of contaminants which may endanger human health, safety, or welfare, or the environment, or which may exceed the applicable cleanup standards; and

9. The records and reporting mechanisms required, including:

   a. Daily operating logs;

   b. Monitoring and laboratory data;

   c. Maintenance and inspection records;

   d. Records for operating costs;

   e. Personnel records;

   f. Mechanism for reporting emergencies; and

   g. Progress reports.

E. Waste Management

A description of the wastes generated by the construction, operation, and maintenance of the corrective measures and how the wastes will be managed shall be included in the CMI Work Plan. Site drainage and how the runoff will be managed shall also be addressed.

F. Other Information

1. A list and description of permits needed to construct and operate the corrective measures shall be included in the CMI Work Plan; and

2. A list of any elements or components of the corrective measures that require custom fabrication or for other reasons are considered long-term procurement items shall be included in the CMI Work Plan. The list shall include the reason that the items are considered long-term procurement items, the length of time for procurement, and the sources of procurement.

G. Project Schedule

A Project Schedule for construction and implementation of the corrective measures which identifies timing for initiation and completion of all project and interim milestones in the CMI process, including submission dates for all CMI deliverables, dates that all necessary permit applications will be submitted to the appropriate agencies and the estimated issuance dates, and the timing of key elements of bidding process, shall be included in the CMI Work Plan.

H. Cost Estimate

A detailed written estimate of the costs to construct and implement the corrective measures shall be included in the CMI Work Plan. The cost estimate developed in the CMS shall be refined to reflect the final design plans and specifications. The cost estimate shall include both capital and operation and maintenance costs.

I. Health and Safety Plan

The licensee shall modify the Health and Safety Plan developed for the RCRA Facility Investigation (RFI), as necessary, to address activities to be performed at the facility to construct, operate, and maintain the corrective measures, and include it in the CMI Work Plan. The updated Health and Safety Plan shall provide information regarding hazard assessment, including inhalation, dermal, ingestion, and physical hazards, personal protective and monitoring equipment, a map of the facility denoting the CMI work areas and associated levels of personal protection required, a list of the emergency contacts and phone numbers, and a map denoting the locations of the facilities providing emergency services. Health and safety issues in the event of a failure of the corrective measures shall also be addressed.

J. Public Involvement Plan

The licensee shall revise the Public Involvement Plan developed during the RFI to include any changes with respect to the public's informational needs during the design and construction activities, and include it in the CMI Work Plan. The Public Involvement Plan shall address specific public involvement activities that will be conducted, including a schedule for the activities.

1. Specific public involvement activities which shall be conducted during the design stage of the CMI include:

   a. Revision of the Public Involvement Plan to reflect public concerns and involvement at this stage of the process; and

   b. Preparation and distribution of a public notice and an updated fact sheet at the completion of the engineering design process.

2. Depending on public interest in a facility at this point in the process, specific public involvement activities which may be conducted during the construction stage of the CMI could include open houses, group meetings, fact sheets on the technical status of the CMI, and maintenance of a public information repository.

K. Report Outlines

The CMI Work Plan shall include an outline of the contents of the Construction Completion Report and the CMI Final Report.

1. The Construction Completion Report shall include the following:

   a. Synopsis of the corrective measures and design criteria, and certification that the corrective measures were constructed in accordance with the approved design plans and specifications;

   b. Listing of the performance criteria, established before the corrective measures were initiated, for judging the functioning of the corrective measures.

   c. Explanation and description of any modifications to the plans, specifications, or performance criteria, and why these were necessary for the project;

   d. Results of operational testing and monitoring, indicating how the initial operation of the corrective measures will meet or exceed the performance criteria;

   e. Summary of significant activities that occurred during construction, including a discussion of problems encountered and how the problems were addressed;

   f. Summary of any inspection findings, including copies of pertinent daily inspection documents, inspection summary reports, and the design engineer's acceptance reports (all of which may be placed in an appendix to Construction Completion Report);

   g. As-built drawings and photographs; and

h. Schedule indicating when any treatment systems will begin full-scale operation.

2. The CMI Final Report shall include the following:

   a. Synopsis of the corrective measures;

   b. Description of the process and criteria for determining when corrective measures, maintenance, and monitoring, may cease.

   c. Demonstration that the corrective measures completion criteria have been met. The demonstration shall include the results of testing or monitoring indicating how the operation of the corrective measures compares to the corrective measures completion criteria;

   d. Summary of work accomplishments, including performance levels achieved, total hours of treatment operation, total volume of material treated or excavated, nature and volume of waste generated;

   e. Summary of significant activities that occurred during operation, including a discussion of problems encountered and how the problems were addressed;

   f. Summary of inspection findings, including copies of pertinent inspection documents (may be placed in an appendix to the Final CMI Report); and

   g. Summary of the total O&M costs.

II. TASK II: CMI IMPLEMENTATION

The licensee shall construct, implement, and operate the corrective measures in accordance with the terms and schedules in the CMI Work Plan, as approved by the Department.

III. TASK III: CMI REPORTING

A. The licensee shall prepare and submit progress reports in accordance with the requirements of Section I.A.2. of this attachment and Conditions VI.I.9. and VII.K. of the license.

B. The licensee shall prepare and submit a Construction Completion Report in accordance with Section K.1. of this attachment and Conditions VI.I.4., VI.I.5., and VI.K. of the license.

C. The licensee shall prepare and submit a CMI Final Report in accordance with Section K.2. of this attachment and Conditions VI.I.7., VI.I.8., and VI.K. of the license.

SECTION M

OTHER FEDERAL LAWS [40 CFR 270.3]

At this time we believe that this facility is in compliance with the following Federal laws: the Wild and Scenic Rivers Act (16 U.S.C 1273 et seq. Section 7); National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq. Section 106 and 36 CFR Part 800); Endangered Species Act (16 U.S.C 1531 et seq. Section 7 and 50 CFR Part 402); Coastal Zone Management Act (16 U.S.C 1451 et seq. Section 307(c) and 15 CFR Part 930); and Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Information will be provided in accordance with the requirements of 40 CFR Part 270.14(b)(20) at the request of the EPA Region V Office or the Michigan Department of Natural Resources.

TABLE C.1(Part A)*
WASTE CODES ACCEPTABLE AT THE CONTAINER MANAGEMENT FACILITY

1. **CHARACTERISTICALLY HAZARDOUS WASTES**
   D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D012, D013, D014, D015, D016, D017, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043.

2. **HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES**
   F001, F002, F003, F004, F005, F006, F007, F008, F009, F010, F011, F012, F019, F024, F025, F032, F034, F035, F037, F038, F039.

3. **HAZARDOUS WASTES FROM SPECIFIC SOURCES**
   K001, K002, K003, K004, K005, K006, K007, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K048, K049, K050, K051, K052, K060, K061, K062, K064, K065, K066, K069, K071, K073, K083, K084, K085, K086, K087, K088, K090, K091, K093, K094, K095, K096, K097, K098, K099, K100, K101, K102, K103, K104, K105, K106, K107, K108, K109, K110, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K131, K132, K136, K141, K142, K143, K144, K145, K147, K148, K149, K150, K151.

4. **DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF**
   P001, P002, P004, P005, P008, P010, P013, P016, P017, P021, P022, P024, P027, P028, P029, P030, P031, P033, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P051, P054, P057, P058, P059, P062, P066, P068, P069, P071, P072, P074, P077, P082, P084, P088, P092, P097, P098, P099, P101, P102, P103, P104, P105, P106, P109, P111, P118, P119, P121, P122.

   U001, U002, U003, U004, U005, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U047, U048, U049, U050, U051, U052, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, For detailed description of a particular waste code accepted at the Container Management Facility, refer to Attachment A.

APPENDIX C.1

ACCEPTABLE HAZARDOUS WASTE TYPES-CONTAINER MANAGEMENT FACILITY

SECTION N

RECORDKEEPING PROCEDURES

This section summarizes the recordkeeping procedures that are implemented by Dynecol, Inc. as required under 40 CFR 264.73 and Michigan Act 64 Rule 299.9609. All records are maintained by Dynecol for a minimum of three years as specified by the regulations.

N-1 INTRODUCTION

All records and plans required by 40 CFR 264.73 and Michigan Act 64, Rule 299.9609, as well as any other records required under the facility's license are retained at the facility and are available, at reasonable times, for inspection by designated representatives of the U.S. EPA and MDNR. All records are retained for a period of at least three years or longer as specified by the regulations. The following records are retained at the facility.

N-2 GENERAL FACILITY RECORDS

- Daily operating record which includes, for each waste received by Dynecol, a description, the quantity, the method and date of treatment or storage, and the location of the waste in the facility cross-referenced to specific manifest document numbers. (See Appendix N-1 for copies of various reporting forms.)

- Waste approval records of wastes from each generator, including initial analyses and any follow-up analyses.

- RCRA Part A Application, plus any modifications.

- Notice of EPA ID Number.

- Inspection reports and any results of inspections including all inspection reports prepared routinely by plant personnel (See Section F, Procedures to Prevent Hazards) and any inspection reports performed by outside contractors or testing services.

- Analytical results of weekly composite effluent monitoring.

- Analytical results of weekly filter cake monitoring.

- Analytical results of ambient air monitoring.

- Analytical results of quarterly groundwater monitoring.

- Copy of the Procedures to Prevent Hazards (Section F).

- Copy of the Contingency Plan (Section G) plus a summary of any incidents that required the implementation of the contingency plan.

- Copy of arrangements and coordination agreements with local authorities regarding the Contingency Plan.

- Copy of the written training program required by the Contingency Plan.

- Personnel training records, as outlined in Section H.

- Copies of any written reports required to be submitted to the EPA or the MDNR after incidents occured at the facility that required implementation of the Contingency Plan per 40 CFR 265.56(j).

- Copies of manifests for each hazardous waste that has been received by or shipped from Dynecol.

- Copies of notices to MDNR of arrangements to receive wastes from foreign sources per 40 CFR 265.12.

- Copy of Closure Plan (Section I), plus any revisions to the Plan.

- Closure cost estimates and any annual adjustments.

- Certificate of liability insurance as required by the U.S. EPA and MDNR.

- Copy of each biennial report as submitted to the U.S. EPA.

- The Hazardous Waste Facility Operating License as issued by the MDNR and any modifications to the permit.

- Copies of any report, data, information, etc., requested by and submitted to any federal, state, county, city agency having authority.

- Un-manifested waste reports.

- Records of waste shipments rejected.

- Land disposal records.

- Generator Records (regarding waste material shipped from Dynecol):

* Copy of test results, analyses, and any other determinations made on the waste shipped off-site.

* Generator manifest copy signed by the initial transporter (for wastes shipped off-site only).

* Generator manifest copy signed and returned by the disposal facility (for wastes shipped off-site only).

* Exception reports, as necessary, per 40 CFR 262.42.

N-3 LAND DISPOSAL RESTRICTION RECORDKEEPING REQUIREMENTS

All facilities which receive or generate restricted wastes, including transfer stations, are subject to land disposal restriction recordkeeping requirements. Generators are required to provide Dynecol with a written notice and certification that complies with provisions of 40 CFR 268.7. These recordkeeping requirements are discussed further in Section C.

For wastes or treatment residues which will be further managed at a different treatment, storage, or disposal facility, Dynecol will comply with the same generator notice and certification requirements.

Dynecol will maintain copies of all generator notices and certifications and copies of notices and certifications sent by Dynecol to other facilities for a minimum of five years.

SECTION O

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: Frank J. Biermann

Name: Frank J. Biermann

Title: President

Date: 11/01/94

SECTION O

CERTIFICATION OF CAPABILITY

I certify to the best of my knowledge and belief that the treatment and storage facilities at Dynecol, Inc. in Detroit, Michigan, are capable of storing hazardous waste materials as specified in this application in the manner described within this application. The facilities included within this certification are:

1) Treatment System and Storage Tanks;
2) Container Storage Facility.

This certification is based upon my knowledge of these facilities and my understanding of Act 64 requirements. This certification does not include certification of construction standards for the proposed Treatment System and Storage Tank modifications per the design plans and specifications.

Signature:

Name: Lennie M. Naeyaert, P.E.

Firm: EARTH TECH/
(formerly WW Engineering & Science)

Date: 12/30/94

Registration #: 37458

State: Michigan

APPENDIX A.1

DWSD SEWER DISCHARGE PERMIT

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

September 08, 1993

Mr. Stephen Kuplicki
Manager
Detroit Water and Sewerage Department
Industrial Waste Control Division
Livernois Center
303 South Livernois
Detroit, MI 48209

Dear Mr. Kuplicki:

SUBJECT: Dynecol, Inc.
Permit Number 923-002

Please be advised that, providing the facts that our Discharge Permit expired on Wednesday, 09/01/93, and our application for Permit Reissuance was timely performed (Please refer to our Letter of Application dated May 17, 1993), it is our understanding that, pursuant to Condition (17)(f) of Section 56-3-61.1 of the City of Detroit Ordinance Number 23-86, our expired Discharge Permit will be automatically extended until modified or reissued by DWSD.

Should you have any questions concerning the above issue, please feel free to contact me.

Truly yours,

Tien H. Pham
Manager, Technical Services

cc: Mr. Frank Biermann, Dynecol, Inc.
DWSD-Permit File

Detroit Water and Sewerage Department
Industrial Waste Control
303 South Livernois
Detroit, Michigan 48209
(313) 297-9400

Coleman A. Young, Mayor
City of Detroit

DETROIT

WATER AND SEWERAGE DEPARTMENT

WASTEWATER DISCHARGE PERMIT - TYPE 3

Section A: General Information: Permit No.: 923-002

Company Name: Dynecol, Inc.

Premise Address: 6520 Georgia

City: Detroit, MI Zip Code: 48211

Mailing Address: Same

City: , MI Zip Code:

Primary Standard Industrial Classification (SIC) Code: 5093

Other SIC Codes:

The above Industrial User is authorized to discharge industrial wastewater to the City of Detroit sewer system in compliance with the City's Wastewater Discharge Ordinance or equivalent local ordinance and any applicable provisions of federal or state law or regulation, and in accordance with discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit is granted in accordance with the application filed in the office of the Director of DWSD, and in conformity with plans, specifications, and other data submitted to the City in support of the above application.

Effective Date: September 2, 1992

Expiration Date: September 1, 1993

Stephen J. Kuplicki
Manager, IWC

Dynecol, Inc.
6520 Georgia
Detroit, MI 48211

Revised
Date: 05/24/93
Page No. 2
Permit No. 923-002

SECTION B: <u>DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS</u>

Representative Sampling Location: Control manhole in front of building; 30' S. of CL Georgia Street, 4' E. of E. wall of press building.

Local Ordinance Limits

PARAMETER	DAILY MAXIMUM (mg/l)	SELF-MONITORING REQUIRED (Y/N)
Total Arsenic (As)	1.0	Y
Total Cadmium (Cd)	2.0	Y
Total Copper (Cu)	4.5	Y
Total Cyanide (CN)	2.0	Y
Total Iron (Fe)	1000.0	Y
Total Lead (Pb)	1.0	Y
Total Mercury (Hg)	0.005	Y
Total Nickel (Ni)	5.0	Y
Total Silver (Ag)	2.0	Y
Total Chromium (Cr)	25.0	Y
Total Zinc (Zn)	15.0	Y
Total Toxic Organic (TTO)	*	Y
PCB - Arochlor 1260	0.0005	N
Total PCB	0.001	N
Fats, Oil, Grease (FOG)	2000	Y
Total Suspended Solids (TSS)	10000	Y
Biochemical Oxygen Demand (BOD)	10000	Y
Phosphorus (P)	500	Y
pH	5.0 - 10.5 (units)	Y

Other Requirements:

(1) Compliance with the General Pollutant Prohibitions

(2) pH between 5.0 - 10.0 (10.5 if alkalinity is less than 300 ppm)

All limitations are based on composite samples, except for FOG, CN, and pH, which are based on grab samples.

Please refer also to Sections C and D-3 regarding self-monitoring and reporting requirements.

*Daily maximum limitation not finalized, self monitoring is required.

SECTION C: SELF-MONITORING REQUIREMENTS

Monitoring frequencies for all significant industrial users will be determined based upon (i) their permit classification, and (ii) the discharge volume of process wastewater.

Noncategorical Industrial Users (Permit Type 3) shall be required to provide analytical data sufficient to demonstrate compliance with the daily maximum limitations, as defined in Section B of this permit, within a single reporting period.

1) Reporting periods for analytical testing shall be as follows:

   (X) a. **Facilities discharging >25,000 gpd process water shall perform a minimum of one (1) wastewater analysis (as defined above) per quarter.**
   ( ) b. **Facilities discharging <25,000 gpd process water shall perform a minimum of one (1) wastewater analysis (as defined above) per six month period.**

2) These results shall be submitted every six (6) months on or before June 30, and December 31 of each year as part of the Six-Month Reporting Requirement.

3) Sampling must be performed for all the parameters identified in Section B of this permit and sampled in accordance with approved methods. Samples must be taken from the location identified in Section B. Use of an alternate location is not acceptable unless concurrence is received from DWSD. Contact DWSD in writing if you wish to request use of an alternate location.

   Grab samples must be used for pH, cyanide, total phenols, fats, oil and grease (FOG), sulfide, and volatile organics. All other pollutants should be collected by flow-proportional sampling techniques, or time composite sampling. A minimum of four (4) grab samples must be obtained for a representative time composite sample.

4) If sampling performed by an Industrial User indicates a violation of the permit limitations, then

   (i) Notification must be made to the Control Authority within 24 hours of becoming aware of the violation, and
   (ii) Repeat the sampling and analysis, and submit the results of the repeat analysis to DWSD within 30 days of becoming aware of the violation.

5) Any Industrial User who monitors any pollutants more frequently than defined in paragraph 1, shall include the results of this analysis within the six month report defined in paragraph 2.

6) Those users who use the data taken by DWSD for their Six Month Report submissions are encouraged to perform additional independent analyses of the wastewater discharge.

SECTION D: **COMPLIANCE REQUIREMENTS**

1) Compliance Agreement

Should the permittee currently be under Compliance or Administrative Order and/or enter into a Compliance Agreement at a future date, that order or agreement shall automatically become a part of this permit. Therefore, any requirement stipulated shall be adhered to as a permit requirement.

2) Slug Control/Spill Prevention Plan (SC/SPP)

The permittee is required to submit a Slug Control/Spill Prevention Plan (SC/SPP) in accordance with City of Detroit guidelines, to provide protection against accidental discharges to the POTW. If an acceptable Slug Control/Spill Prevention Plan has not been submitted, or if there are questions regarding your facility's status, the permittee should contact the Emergency Response Group at 297-9489.

Note: Please disregard this section if your facility has been granted an exemption from the Slug Control/Spill Prevention Plan requirement.

3) Reporting Requirements

A Six Month Discharge Report shall be submitted biannually to the Department by June 30 and December 31 of each year.

The report shall be signed, dated, and certified by an authorized representative of the Industrial User, or a registered professional engineer who is knowledgeable of the facility's discharge, and submitted in accordance with the Department's Guidance Requirements.

This report shall include:

(i) Wastewater Analyses (as identified in Section C)

(ii) Report whether the applicable pretreatment standards are being met on a consistent basis and, if not, what additional operation and maintenance practices and/or pretreatment construction is necessary to bring the Industrial User into compliance.

(iii) The following additional requirement.

Your next Six-Month Report is due by June 30, 1993.

Dynecol, Inc.
6520 Georgia
Detroit, MI 48211

PERMIT DEFINITION

1. **FACILITY AND PROCESS DESCRIPTION:**
   This is a centralized waste treatment facility handling hazardous and nonhazardous wastes. The treatment process consists of oxidation - reduction and neutralization. Ferrous Sulfate and Sodium Bisulfate is used to reduce the metals from hexavalent to trivalent state. The Ferrous Sulfate filtrate is sold to water treatment facilities and the filter cake is hauled away to landfills.

2. **PROCESS WASTEWATER:**
   Process wastewater is generated from the treatment of the industrial and commercial hazardous and non hazardous process waste.

3. **APPLICABLE CLASSIFICATION:**
   This facility is classified as a Significant Industrial User based on their classification as a treatment and storage disposal facility. as per City Ordinance 23-86, Section 56-3-58.1.

SGK/ls

APPENDIX A.2

WCAPCD AIR PERMITS

WAYNE COUNTY HEALTH DEPARTME
AIR POLLUTION CONTROL DIVISIC
MAIN OFFICE: (313) 567-4
2211 EAST JEFFERSON, DETROIT, MICHIGAN 482
DOWNRIVER OFFICE: (313) 281-8
152 ELM STREET, WYANDOTTE, MICHIGAN 48

June 13, 1986

Mr. Wayne D. Laraway
Vice President
Waste Acid Services, Inc
6520 Georgia Street
Detroit, Michigan 48211

SUBJECT: APPROVAL OF INSTALLATION PERMIT NO. C-6917 FOR INSTALLATION OF A CAUSTIC RECYCLE SCRUBBER AND PERMIT NOS. C-6977 THRU C-7980 FOR INSTALLATION OF FOUR ACID STORAGE TANKS AT 6520 GEORGIA STREET, DETROIT; AMENDED LETTER OF MAY 9, 1986; APPROVAL WITH CONDITIONS

Dear Mr. Mackinder:

We have completed our review of the installation permit applications for compliance with all applicable Federal, State and Wayne County air pollution control regulations, rules and ordinances. We shall approve these permits subject to the following general conditions and with written concurrence by your organization with the following special conditions. Your written concurrence signifies your acknowledgement of and agreement to the special conditions.

GENERAL CONDITIONS

1. Not more than 30 days after completion of the installation, the applicant shall apply, in writing, for a Certificate of Operation. Written application should be sent to: Mr. Michael Maillard, Director, Enforcement Services, Wayne County Department of Health, Air Pollution Control Division, 2211 East Jefferson, Detroit, Michigan 48207.

2. Trial operation of this emission source shall be allowed for 90 days, provided such operation is in compliance with all of the terms and conditions contained in the installation permit. If a Certificate of Operation has not been issued for an emission source prior to the expiration of the trial operation period, an extension of trial operation may be requested of the Division Director.

3. Operation of the emission source shall permanently cease upon denial of the Certificate of Operation by this Division.

4. The applicant shall demonstrate compliance with all Division regulation requirements and other applicable state and federal regulation requirements and with all general and special conditions of this permit prior to the issuance of the Certificate of Operation.

5. The applicant shall not reconstruct, alter, modify, expand or relocate this emission source unless plans, specifications and an application for an installation permit are submitted to and approved by this Division.

6. No emission source shall be operated for any other purpose or in any other manner than that for which the installation permit was approved and for which a Certificate of Operation has been issued unless otherwise authorized in writing by the Division. Such emission source shall also be maintained in a state of good repair.

7. Operation of this emission source shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant value or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

8. Operation of this emission source shall not interfere with the attainment or maintenance of the air quality standard for any air contaminant.

9. Operation of this emission source shall not result in significant deterioration of air quality.

10. The applicant shall provide notification of any abnormal conditions or malfunction of process or control equipment covered by this application, resulting in emissions in violation of Division requirements or of any permit conditions for more than two hours, to the Enforcement Section of this Division. Such notice shall be made as soon as reasonably possible, but not later than 9:00 a.m. of the next working day. The applicant shall also, within 10 days, submit to the Enforcement Section of this Division a written detailed report, including probable causes, duration of violation, remedial action taken and the steps which are being undertaken to prevent a reoccurrence.

11. Approval of this application does not preclude the applicant from complying with any future regulations which may be promulgated.

12. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

13. Act No. 53 - Applicant shall notify any public utility of any excavation, tunneling and discharging of explosives or demolition of buildings which may affect said utility's facilities in accordance with Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled Laws and comply with each of the requirements of that Act.

14. The restrictions and conditions of this installation permit shall apply to any person or legal entity which now or shall hereafter own or operate the emission source for which this installation permit is issued. Any new owner or operator shall immediately notify the Director of the Enforcement Section, in writing, of such change in ownership or principal operator status of this emission source.

15. If the installation, reconstruction, relocation or alteration of the emission source for which this permit has been approved has not commenced within, or has been interrupted for, 18 months, this permit shall become void unless otherwise authorized by this Division.

SPECIAL CONDITIONS

16. The facility shall comply with all the general and specific conditions of the Hazardous Waste Disposal Facility operating license issued to you on March 17, 1982 by the Michigan Department of Natural Resources, Hazardous Waste Division under 1979 P.A.:64.

17. The facility shall accept for disposal only the hazardous waste types: k062 - spent pickle liquor from steel finishing operations; and D002 - corrosive.

18. Impacts of the non-criteria pollutant hydrochloric acid emissions from the caustic recycle scrubber stack, at the property line shall not exceed the acceptable ambient concentrations of 70 $\mu g/m^3$ for hydrochloric acid, 10 $\mu g/m^3$ for sulfuric acid and 50 $\mu g/m^3$ for nitric acid.

19. The facility must comply with MDNR R336.1373 to control fugitive dust.

20. The Division reserves the authority to conduct or require any odor testing or other pollutant testing at applicant's

facility and at the applicant's expense. Any required tests shall be performed utilizing methods acceptable to this Division and with prior Division approval.

21. After a determination by and written notification from the Division Director that emissions from the applicant's operation(s) are causing unreasonable interference with the common public right to live free from foul or noxious odors, the applicant shall immediately cease the operation(s) until the cause of the odors can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting the Health Officer may continue, modify or rescind the cessation order.

22. Throughput design capacity of the facility to process wastes listed in Condition 17 shall not exceed 60,000 gallons per day or 18,720,000 gallons per year.

23. Applicant shall not process hazardous wastes in the neutralization tanks unless the caustic recycle scrubber system is installed and operating properly.

24. Applicant shall maintain the pH value of the caustic recycle scrubber solution a minimum of 10 or more.

25. Applicant shall not operate the neutralization process for more than 24 hours per day and 312 days per year, or 7488 hours per year.

26. Applicant shall exhaust the emissions from tank Nos. 12, 13, 16, 17 through the caustic recycle scrubber system.

27. The exhaust emissions from the caustic recycle scrubber shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 20 inches at an exit point not less than 70 feet above grade level.

28. There shall be no visible emissions from the caustic recycle scrubber stack.

Please indicate written concurrence to these special conditions by signing and dating the confirmation copies of this letter by an authorized representative of your organization and returning one copy to this Division by July 11, 1986, retaining the original and other confirmation copy for your files. We shall approve these permits upon receipt of the signed and dated confirmation copy of this letter.

Thank you for your cooperation in this matter.

Very truly yours,

Alan M. Greenberg

Alan M. Greenberg
Director

AMG:RKS/jrb RKS ack

Enclosures

Waste Acid Services

WASTE ACID SERVICES, INC.

6520 GEORGIA STREET·DETROIT, MICHIGAN 48211
313-571-7140

July 25, 1986

Mr. Alan M. Greenberg
Wayne County Health Dept
Air Pollution Control Division
2211 E. Jefferson
Detroit, Michigan 48207

Dear Mr. Greenberg:

Please find enclosed the completely executed confirmation copy of the installation permit for:

Caustic Recycle Scrubber	C-6917
Four Acid Storage Tanks	C-6977 thru C-6980

Please note that Item 22 of the special conditions relates to our operating license which was issued in March of 1982. At that time the throughput capacity, 60,000 gallons per day, was based on, but not limited to operations of 14 hours per day. This has since been amended to reflect a 24-hour operation or 144,000 gallons per day.

The EPA and MDNR are aware of this modification, and our operating license is being amended in order to reflect this change.

We appreciate the cooperation of your staff to assist us in this installation.

Yours Very Truly,

Wayne D. Laraway
President

WDL/mag

AIR POLLUTION CONTROL DIVISION
MAIN OFFICE: (313) 567-4100
2211 EAST JEFFERSON
DETROIT, MICHIGAN 48207
DOWNRIVER OFFICE: (313) 281-8096
152 ELM STREET
WYANDOTTE, MICHIGAN 48192

DEPARTMENT OF PUBLIC HEALTH
WAYNE COUNTY

EDWARD H. MCNAMARA
COUNTY EXECUTIVE
VERNICE DAVIS-ANTHONY, MPH
HEALTH OFFICER
DONALD LAWRENCHUK, M.D., MPH
MEDICAL DIRECTOR

March 30, 1989

Mr. Frank Bierman, President
Dynecol, Inc.
6520 Georgia
Detroit, Michigan 48211

SUBJECT: PERMIT CONDITIONS - AGREEMENT BY COUNTER SIGNATURE

PERMIT NUMBERS: C-7425 through C-7431
SOURCE DESCRIPTION: FOUR 20,000 GALLON FIBERGLASS SECONDARY TREATMENT TANKS, DESIGNATED T-18, T-19, T-20 AND T-21, TWO LIME STORAGE SILOS WITH FABRIC FILTER DUST COLLECTOR
SOURCE LOCATION: 6520 GEORGIA, DETROIT, MICHIGAN

Dear Mr. Bierman:

We have completed our review of the installation permit applications for compliance with all applicable Federal, State and Wayne County air pollution control regulations, rules and ordinances. We shall approve these permits subject to the following general conditions and with written concurrence by your organization with the following special conditions. Your written concurrence signifies your acknowledgement of and agreement to the special conditions.

GENERAL CONDITIONS

1. Not more than 30 days after completion of the installation, the applicant shall apply, in writing, for a Certificate of Operation. Written application should be sent to: Mr. Michael Maillard, Director, Enforcement Services, Wayne County Department of Health, Air Pollution Control Division, 2211 East Jefferson, Detroit, Michigan 48207.

2. Trial operation of this emission source shall be allowed for 90 days, provided such operation is in compliance with all of the terms and conditions contained in the installation permit. If a Certificate of Operation has not been issued for an emission source prior to the expiration of the trial operation period, an extension of trial operation may be requested of the Division Director.

3. Operation of the emission source shall permanently cease upon denial of the Certificate of Operation by this Division.

4. The applicant shall demonstrate compliance with all Division regulation requirements and other applicable state and federal regulation requirements and with all general and special conditions of this permit prior to the issuance of the Certificate of Operation.

5. The applicant shall not reconstruct, alter, modify, expand or relocate this emission source unless plans, specifications and an application for an installation permit are submitted to and approved by this Division.

6. No emission source shall be operated for any other purpose or in any other manner than that for which the installation permit was approved and for which a Certificate of Operation has been issued unless otherwise authorized in writing by the Division. Such emission source shall also be maintained in a state of good repair.

7. Operation of this emission source shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant value or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

8. Operation of this emission source shall not interfere with the attainment or maintenance of the air quality standard for any air contaminant.

9. Operation of this emission source shall not result in significant deterioration of air quality.

10. The applicant shall provide notification of any abnormal conditions or malfunction of process or control equipment covered by this application, resulting in emissions in violation of Division requirements or of any permit conditions for more than two hours, to the Enforcement Section of this Division. Such notice shall be made as soon as reasonably possible, but not later than 9:00 a.m. of the next working day. The applicant shall also, within 10 days, submit to the Enforcement Section of this Division a written detailed report, including probable causes, duration of violation, remedial action taken and the steps which are being undertaken to prevent a reoccurrence.

11. Approval of this application does not preclude the applicant from complying with any future regulations which may be promulgated.

12. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

13. Act No. 53 - Applicant shall notify any public utility of any excavation, tunneling and discharging of explosives or demolition of buildings which may affect said utility's facilities in accordance with Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled Laws and comply with each of the requirements of that Act.

14. The restrictions and conditions of this installation permit shall apply to any person or legal entity which now or shall hereafter own or operate the emission source for which this installation permit is issued. Any new owner or operator shall immediately notify the Director of the Enforcement Section, in writing, of such change in ownership or principal operator status of this emission source.

15. If the installation, reconstruction, relocation or alteration of the emission source for which this permit has been approved has not commenced within, or has been interrupted for, 18 months, this permit shall become void unless otherwise authorized by this Division.

SPECIAL CONDITIONS

16. Applicant shall not receive incoming industrial wastes directly into Tanks T-18 through T-21.

17. Wastes received in Tanks T-18 through T-21 shall not have a pH less than 6.0 nor a pH greater than 8.0.

18. There shall be no heating of the wastes in Tanks T-18 through T-21.

19. Maximum combined through-put for Tanks T-18 through T-21 shall not exceed 144,000 gallons of waste per day.

20. After a determination by and written notification from the Division Director that emissions from this operation are causing unreasonable interference with the common public right to live free from foul or noxious odors, the applicant shall immediately cease operations until the cause of odors can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the

Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting, the Health Officer may continue, modify or rescind the cessation order.

21. Through-put of lime shall not exceed 3,000 tons per year.

22. Lime silos shall not be utilized unless the fabric filter collector is correctly installed and operating properly.

23. Particulate emissions from the fabric filter collector shall not exceed 0.004 grains per dry standard cubic foot, 0.034 pounds per hour nor 0.15 tons per year.

24. There shall be no visible emissions from the operation of the lime silos and fabric filter collector.

25. There shall be no visible emissions from the operation of the secondary process tanks, Tanks T-18 through T-21.

26. Odorous emissions from the exhaust of the secondary treatment building shall not exceed 50 odor units.

27. Applicant shall clean all roadways and parking lots on a daily basis. Cleaning shall utilize an acceptable method such as vacuum sweeping or wet sweeping.

28. Applicant shall not accept material in Tanks T-18 through T-21 with a cyanide content greater than 20 parts per million.

29. This permit does not supersede, nor replace, the need for a current operating license as required under P.A. 64 of 1979 (Act 64). Applicant shall comply with all requirements of their Act 64 license.

30. Exhaust flow rate for the fabric filter collector shall not exceed 1000 cubic feet per minute.

31. Fabric filter cloth area shall be a minimum of 180 square feet.

32. Applicant shall not process any material in Tanks T-18 through T-21 containing volatile organic compounds.

33. Applicant shall keep a written log containing tank identification, daily waste through-put, and daily lime through-put. This log shall be kept on hand for a period of two years and shall be made available to Division personnel upon their request.

Please indicate written concurrence to these special conditions by signing and dating the confirmation copies of this letter by an authorized representative of your organization and returning both copies to this Division by May 1, 1989, retaining the original for your files. We shall approve these permits upon receipt of the signed and dated confirmation copies of this letter.

Thank you for your cooperation in this matter.

Very truly yours,

Alan M. Greenberg
Director

AMG:KFB/kfb a:86009.kb2
Enclosures

AIR POLLUTION CONTROL DIVISION
MAIN OFFICE
640 Temple Street, Suite 700
Detroit, Michigan 48201
(313) 832-5000
FAX: (313) 832-5066
DOWNRIVER OFFICE
Eureka Road
231 Eureka Road
Wyandotte, Michigan 48192
(313) 281-8396
FAX: (313) 281-6973

DEPARTMENT OF PUBLIC HEALTH
WAYNE COUNTY

EDWARD H. McNAMARA
County Executive
Bernard N. Kilpatrick
Assistant County Executive
Cynthia Taueg, MPH
Director-Health Officer
Donald Lawrenchuk, M.D., MPH
Medical Director

September 17, 1991

Mr. Frank Biermann, President
Dynecol, Inc.
6520 Georgia
Detroit, Michigan 48211

SUBJECT: PERMIT CONDITIONS - AGREEMENT BY COUNTER SIGNATURE

PERMIT NUMBERS: C-8572, C-8573, C-8574, C-9403, C-9404, 9446, C-9447, C-9448 & C-9449

SOURCE DESCRIPTION: REGENERATIVE ACTIVATED CARBON ADSORPTION UNIT, CAUSTIC SCRUBBER, ORGANIC VACUUM PROCESS VESSEL, ORGANIC & INORGANIC DRUM WASHING STATIONS, DRUM SHREDDER, TWO-SPEED EXHAUST FAN AND TRANSFER/BULKING VENTILATION FOR HAZARDOUS WASTE DRUM BULKING FACILITY

SOURCE LOCATION: 6520 GEORGIA, DETROIT

REVISIONS OF NOVEMBER 15, 1989 & JANUARY 5, 1990 LETTERS

Dear Mr. Biermann:

We have completed our review of the installation permit applications for compliance with all applicable Federal, State and Wayne County air pollution control regulations, rules and ordinances. We shall approve these permits subject to the following general conditions and with written concurrence by your organization with the following special conditions. Your written concurrence signifies your acknowledgement of and agreement to the special conditions.

GENERAL CONDITIONS

1. Not more than 30 days after completion of the installation, the applicant shall apply, in writing, for a Certificate of Operation. Written application should be sent to: Mr. Michael Maillard, Director, Enforcement Services, Wayne County Department of Health, Air Pollution Control Division, 640 Temple Street, Suite 700, Detroit, Michigan 48201.

2. Trial operation of this emission source shall be allowed for 90 days, provided such operation is in compliance with all of the terms and conditions contained in the installation permit. If a Certificate of Operation has not been issued for an emission source prior to the expiration of the trial operation period, an extension of trial operation may be requested of the Division Director.

3. Operation of the emission source shall permanently cease upon denial of the Certificate of Operation by this Division.

4. The applicant shall demonstrate compliance with all Division regulation requirements and other applicable state and federal regulation requirements and with all general and special conditions of this permit prior to the issuance of the Certificate of Operation.

5. The applicant shall not reconstruct, alter, modify, expand or relocate this emission source unless plans, specifications and an application for an installation permit are submitted to and approved by this Division.

6. No emission source shall be operated for any other purpose or in any other manner than that for which the installation permit was approved and for which a Certificate of Operation has been issued unless otherwise authorized in writing by the Division. Such emission source shall also be maintained in a state of good repair.

7. Operation of this emission source shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant value or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

8. Operation of this emission source shall not interfere with the attainment or maintenance of the air quality standard for any air contaminant.

9. Operation of this emission source shall not result in significant deterioration of air quality.

10. The applicant shall provide notification of any abnormal conditions or malfunction of process or control equipment covered by this application, resulting in emissions in violation of Division requirements or of any permit conditions for more than two hours, to the Enforcement Section of this Division. Such notice shall be made as soon

as reasonably possible, but not later than 9:00 a.m. of the next working day. The applicant shall also, within 10 days, submit to the Enforcement Section of this Division a written detailed report, including probable causes, duration of violation, remedial action taken and the steps which are being undertaken to prevent a recurrence.

11. Approval of this application does not preclude the applicant from complying with any future regulations which may be promulgated.

12. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

13. Act No. 53 - Applicant shall notify any public utility of any excavation, tunneling and discharging of explosives or demolition of buildings which may affect said utility's facilities in accordance with Act 53 of the Public Acts of 1974, being sections 460.701 to 460.718 of the Michigan Compiled Laws and comply with each of the requirements of that Act.

14. The restrictions and conditions of this installation permit shall apply to any person or legal entity which now or shall hereafter own or operate the emission source for which this installation permit is issued. Any new owner or operator shall immediately notify the Director of the Enforcement Section, in writing, of such change in ownership or principal operator status of this emission source.

15. If the installation, reconstruction, relocation or alteration of the emission source for which this permit has been approved has not commenced within, or has been interrupted for, 18 months, this permit shall become void unless otherwise authorized by this Division.

SPECIAL CONDITIONS

16. After a determination by and written notification from the Division Director that emissions from the bulk/transfer station or the storage building are causing unreasonable interference with the common public right to live free from foul or noxious odors, the applicant shall immediately cease operations until the cause of odors can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated

shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting, the Health Officer may continue, modify or rescind the cessation order.

17. Applicant shall not bulk or transfer any organic material unless the vapor recovery exhaust and the drum unloading hood exhaust from the bulk/transfer station are vented through a carbon adsorption system which has been installed, and is operating, properly.

18. Applicant shall not bulk or transfer any material which is not organic unless the vapor recovery exhaust and the drum unloading hood exhaust from the bulk/transfer station are vented through the wet caustic scrubber system.

19. Exhaust from the carbon adsorption system shall be discharged through a wet scrubber. Exhaust flow rate from the wet scrubber shall be 5000 cubic feet per minute ($\pm$10%).

20. Exhaust from the bulk/transfer station shall be discharged unobstructed vertically upwards from a stack not less than 70 feet above grade, nor more than 20 inches in diameter.

21. There shall be no visible emissions from the operation of the bulk/transfer station or the storage building.

22. Emissions of Tetrachloroethylene from the bulk/transfer station exhaust shall not exceed 0.21 grams per second nor 1.66 pounds per hour.

23. Emissions of Trichloroethylene from the bulk/transfer station exhaust shall not exceed 0.07 grams per second nor 0.55 pounds per hour.

24. Emissions of Methylene Chloride from the bulk/transfer station exhaust shall not exceed 0.12 grams per second nor 0.95 pounds per hour.

25. Emissions of Carbon Tetrachloride from the bulk/transfer station exhaust shall not exceed 0.005 grams per second nor 0.04 pounds per hour.

26. Emissions of Benzene from the bulk/transfer station exhaust shall not exceed 0.017 grams per second nor 0.13 pounds per hour.

27. Emissions of Acrylonitrile from the bulk/transfer station exhaust shall not exceed 0.001 grams per second nor 0.01 pounds per hour.

28. Emissions of Chloroform from the bulk/transfer station exhaust shall not exceed 0.005 grams per second nor 0.04 pounds per hour.

29. Emissions of Epichlorohydrin from the bulk/transfer station exhaust shall not exceed 0.10 grams per second nor 0.79 pounds per hour.

30. Emissions of Ethylene Dichloride from the bulk/transfer station exhaust shall not exceed 0.011 grams per second nor 0.09 pounds per hour.

31. Emissions of Formaldehyde from the bulk/transfer station exhaust shall not exceed 0.01 grams per second nor 0.079 pounds per hour.

32. Emissions of 1,1,1,2 Tetrachloroethane from the bulk/transfer station exhaust shall not exceed 0.009 grams per second nor 0.069 pounds per hour.

33. Emissions of 1,1,2,2 Tetrachloroethane from the bulk/transfer station exhaust shall not exceed 0.002 grams per second nor 0.02 pounds per hour.

34. Emissions of p-Toluidine from the bulk/transfer station exhaust shall not exceed 0.004 grams per second nor 0.03 pounds per hour.

35. Total Volatile Organic Compound (VOC) emissions from the bulk/transfer station exhaust shall not exceed 12.60 pounds per hour nor 31.45 tons per year.

36. Emissions of Hydrochloric Acid from the bulk/transfer station exhaust shall not exceed 0.016 grams per second nor 0.12 pounds per hour.

37. Emission of Sulfuric Acid from the bulk/transfer station exhaust shall not exceed 0.149 grams per second nor 1.18 pounds per hour.

38. Emissions of Hydrogen Cyanide from the bulk/transfer station exhaust shall not exceed 0.023 grams per second nor 0.18 pounds per hour.

39. Applicant shall perform stack testing within the trial

operating period for the compounds listed in Conditions 22 through 38 to verify compliance with the emissions limits specified. Stack testing shall be at the applicant's expense and with prior approval of this Division. Written notification of the testing shall be given to this Division a minimum of 10 days prior to the testing. A written report containing the testing results and operating data shall be submitted to this Division within 45 days of completion of the testing.

40. Emissions of 2-Nitropropane from the bulk/transfer station exhaust shall not exceed 0.08 grams per second nor 0.63 pounds per hour.

41. Emissions of n-Butyl Alcohol from the bulk/transfer station exhaust shall not exceed 0.35 grams per second nor 2.77 pounds per hour.

42. Emissions of o-Dichlorobenzene from the bulk/transfer station exhaust shall not exceed 0.71 grams per second nor 5.62 pounds per hour.

43. Emission of Carbon Disulfide from the bulk/transfer station exhaust shall not exceed 0.24 grams per second nor 1.90 pounds per hour.

44. Applicant may bulk only those wastes which are identified by waste codes listed in Appendix "A".

45. Applicant may store only those wastes which are identified by waste codes listed in Appendix "A" and Appendix "B".

46. Applicant shall not bulk the following types of material:

    A. Materials with a solids content greater than 75 percent and/or are non-pumpable.
    B. Pesticides, insecticides, herbicides or fungicides with any other type of material.
    C. Inorganic material with organic material.
    D. Material having a pH below 7 with material having a pH greater than 7.
    E. Material which is reactive in nature.
    F. Cyanide-containing wastes with any other type of wastes.

47. Applicant shall conduct compatibility testing prior to bulking any wastes to determine that there will be no environmentally adverse reactions between the materials which will be bulked.

48. Applicant shall perform odor testing and testing for total Volatile Organic Compounds from the storage building exhaust during the trial operating period to determine that there will be no adverse environmental impacts from this exhaust. Stack testing shall be at the applicant's expense and with prior approval of this Division. Written notification of the testing shall be given to this Division a minimum of 10 days prior to the testing. A written report containing the testing results and operating data shall be submitted to this Division within 45 days of completion of the testing.

49. Carbon adsorption system shall consist of a carbon bed containing a minimum of 1800 pounds of activated carbon. Unit shall be equipped with a saturation indicator. Applicant shall change the carbon bed within 48 hours of indication that the carbon bed is 70 percent expended or regenerate at the point of breakthrough detection. The vapors shall be routed through the standby carbon bed during the regeneration.

50. Cyanide wastes shall be stored in a bay which is totally segregated from the acid waste bays. Acidic wastes shall not be stored in immediately adjacent or opposite bays. Bays shall be labelled in a highly visible manner.

51. Applicant shall not bulk wastes that have a cyanide content greater than 10 parts per million.

52. Applicant shall re-install the bung or replace the head immediately after emptying or removing liquid material from the drum, unless cleaning is required.

53. Applicant shall not bulk more than 276,000 gallons of waste per year.

54. The following wastes and waste categories shall not be accepted at this facility:

    A. Wastes containing dioxins.
    B. Wastes containing greater than 50 ppm PCB's.
    C. Radioactive wastes.
    D. Explosive wastes.
    E. Wastes in pressure containers.
    F. Wastes which could potentially result in an acute worker or neighborhood risk in the event of a ruptured or spilled container.

55. Exhaust from the organic drum wash area, drum shredder when shedding drums containing organic wastes and vent from

organic vacuum process vessel shall be exhausted through activated carbon bed.

56. Exhaust from the inorganic drum wash area, drum shredder when shedding drums containing inorganic wastes shall be exhausted through caustic wet scrubber.

57. Exhaust from the scrubber shall not exceed 50 odor units per cubic foot at the stack if the stack is at least minimum stack height as defined in Appendix C of the Wayne County Air Pollution Control Ordinance. Exhaust from the scrubber shall not exceed 150 odor units per cubic foot at the stack if the stack height is at least good engineering practice stack height as defined in Appendix C of the Wayne County Air Pollution Control Ordinance.

Please indicate written concurrence to these special conditions by signing and dating the confirmation copies of this letter by an authorized representative of your organization and returning both copies to this Division by October 19, 1991, retaining the original for your files. We shall approve these permits upon receipt of the signed and dated confirmation copies of this letter.

Thank you for your cooperation in this matter.

Very truly yours,

Peter O. Warner Ph.D.
Acting Director

POW/JS
RKW

a:\dynecol\carbon.wp/js3

Attachments
Enclosures

Confirmed 10/2/91 FJB

APPENDIX "A"

9/17/91

WASTE CODES ACCEPTABLE FOR STORAGE AND BULKING

F001	F006	D001*	D008	D014	D020	D026	D032	D038
F002	F019	D002	D009	D015	D021	D027	D033	D039
F003		D004	D010	D016	D022	D028	D034	D040
F004	001D	D005	D011	D017	D023	D029	D035	D041
F005	003D	D006	D012	D018	D024	D030	D036	D042
F024		D007	D013	D019	D025	D031	D037	D043

K009	K017	K024	K029	K085	K116	K001
K010	K018	K093	K095	K105	K117	
K011	K019	K094	K096	K111	K118	
K013	K020	K025	K030	K112	K136	
K014	K021	K026	K083	K113		
K015	K022	K027	K103	K114		
K016	K023	K028	K104	K115		

K002	K071	K123	K048	K062	K100
K003	K073	K124	K049		
K004	K106	K125	K050		
K005		K126	K051		
K006			K052		
K008					
K031	K036	K098	K084	K086	K087
K032	K037	K042	K101		
K033	K038	K043	K102		
K034	K039	K099			
K097	K040				
K035	K041				

U002	U029	U055	U076	U103	U122	U144
U003	U031	U056	U077	U105	U123	U147
U007	U036	U057	U078	U106	U125	U151
U008	U037	U067	U079	U107	U129	U154
U009	U041	U070	U080	U108	U131	U159
U012	U044	U071	U083	U112	U134	U161
U019	U045	U072	U093	U113	U138	U165
U025	U052		U102	U117	U140	U167

U168	U190	U205	U211	U221	U239	U359
U169	U191	U207	U213	U225	U244	
U171	U201	U208	U214	U226	U243	
U183	U202	U209	U215	U227	U328	
U188	U204	U210	U220	U228	U353	

P001	P051	011U	101U	163U	001K
P005	P059	033U	131U	172U	002K
P022	P077	054U	139U	173U	
P028		059U	150U	174U	
P037		070U	155U		
P047		072U	161U		

* Provided that the flash point is not less than 90°F

APPENDIX "B"

1/5/90

WASTE CODES ACCEPTABLE FOR STORAGE ONLY

F007	F010	D001*	K007	K061	U073	
F008	F011	D003	K060	K069		
F009	F012					
U001	U016	U026	U035	U049	U062	U081
U004	U017	U027	U038	U050	U063	U082
U005	U018	U028	U039	U051	U064	U084
U010	U020	U030	U042	U058	U068	U085
U011	U021	U032	U043	U059	U069	U086
U014	U022	U033	U047	U060	U074	U087
U015	U024	U034	U048	U061	U075	U088
U089	U096	U111	U120	U132	U141	U150
U090	U097	U114	U121	U133	U143	U152
U091	U099	U116	U124	U135	U145	U153
U092	U101	U118	U126	U136	U146	U155
U094	U109	U119	U127	U137	U148	U156
U095	U110		U128	U139	U149	U157
U158	U172	U179	U186	U197	U218	U238
U162	U173	U180	U187	U200	U219	U240
U163	U174	U181	U189	U203	U222	U243
U164	U176	U182	U192	U206	U234	U246
U166	U177	U184	U193	U216	U235	U249
U170	U178	U185	U194	U217	U236	
P002	P024	P039	P049	P069	P098	P111
P004	P027	P040	P054	P071	P099	P113
P008	P029	P041	P057	P072	P101	P119
P010	P030	P042	P058	P074	P102	P121
P013	P031	P043	P062	P082	P103	P122
P016	P033	P044	P066	P084	P104	
P017	P034	P045	P068	P088	P105	
P021	P036	P046		P092	P106	
	P038	P048		P097	P109	
001U	013U	027U	044U	058U	078U	095U
002U	014U	028U	046U	061U	079U	096U
003U	015U	029U	047U	063U	080U	097U
004U	016U	034U	048U	064U	082U	098U
005U	017U	036U	049U	065U	083U	099U
006U	020U	037U	050U	068U	086U	100U
007U	021U	038U	051U	071U	088U	102U
008U	022U	041U	052U	073U	089U	103U
009U	023U	042U	056U	075U	090U	106U
012U	024U	043U	057U	076U	094U	108U
110U	118U	128U	140U	147U	158U	167U
113U	120U	129U	141U	148U	159U	168U
114U	121U	132U	142U	151U	162U	169U
115U	122U	134U	143U	152U	164U	170U
116U	124U	137U	144U	154U	165U	171U
117U	127U	138U	146U	157U	166U	175U

* For materials with a flash point less than, or equal to, 90°F

APPENDIX B

MAJOR CORRESPONDENCE TO & FROM WCAPCD ABOUT AIR PERMITS APPLICATION

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

October 06, 1994

Mr. Rajen G. Patel
Air Pollution Engineer
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Rajen:

In reference to our letter of September 30, 1994, the following is submitted:

(1) Updated summary of emissions for the four additional TC organic waste codes, i.e., D020 (Chlordane), D030 (2,4-dinitrotoluene), D031 (Heptachlor), and D038 (Pyridine), prepared for us by Hands and Associates. Refer to Attachment A.

In addition, per your request for additional information on the 500 CFM caustic scrubber, the following is provided:

(a) Percent Efficiency : 99

(b) Type of Packing: Jaeger Tri-Packs.

Should you need any additional information, please feel free to contact me.

Truly yours,

Tien H. Pham
Manager, Technical Services

cc: WCAPCD-Permit File

HANDS & ASSOCIATES

10900 Harper Avenue
The PVS Chemicals Building
Detroit, Michigan 48213
(313) 924-0118
FAX 921-4730

October 5, 1994

Mr. Tien Hy Pham
Dynecol, Inc.
6520 Georgia Street
Detroit, MI 48211

Dear Tien:

Enclosed are the tables that you requested for the addendum to the Wayne County Permit Modification Application. We used the same method to calculate emissions as used previously. Using the partial pressure of the volatile constituent in the aqueous waste stream, we estimated the amount of constituent that would be emitted based on our understanding of the maximum compressed air flow rate used for mixing in the primary treatment chamber (350 scfm). Using the results of the previously performed dispersion model on the existing scrubber stack, we calculated maximum ambient impacts while processing waste without using the enhanced treatment system.

Two of the four substances had MDNR interim screening levels associated with them that we could use to compare to maximum expected ambient impacts. Chlordane and Heptachlor do not have published MDNR screening levels (ITSL or IRSL). NIOSH has developed occupational health levels for chlordane and heptachlor, but they have also indicated that these materials may be carcinogenic. Using the NIOSH developed occupational levels results in fairly generous ITSL's. We consider these values too generous and have decided to use the MDNR default screening level as a relatively conservative value for an estimated MDNR IRSL.

The pesticide TCLP's are not classified as either semi-volatile or volatile. I used a cutoff vapor pressure of 1 mm HG at 70 deg. F to separate semi-volatile (30,000 ppm incoming waste stream) and volatile (30 ppm incoming waste stream).

Using this cutoff, the proposed permit condition of using the enhanced control system when semi-volatile constituents (VP<1mm Hg) are above 30,000 ppm and when volatile constituents (vp≥1mm Hg) are above 30 ppm still holds.

We appreciate the opportunity to work with you on this project. Please feel free to contact us if you have any additional questions.

Sincerely,
HANDS & ASSOCIATES, INC.

Larry Hands

Lawrence M. Hands, P.E.
President

Primary Treatment Tank Emission Calculations

Parameter	*volatile or semi volatile*	*VOC MW*	*VP mm Hg 20 deg C*	*Cutoff Conc. ppm*	*Mole Fraction in*	*LbMole/ Hour in*	*Partial Pressure mm HG*	*LbMole/ Hour Out*	*Lbs/ Hour Out*	*Grams/ second out*
Air		29	760			54.55		54.55		
TCLP Chlorodane	p-sv	410	0.00001	30000	3.0E-02		3E-07	2.2E-08	8.8E-06	1.1E-06
TCLP 2,4-Dinitrotoluene	p-v	182	1.00	30	3.0E-05		0.00003	2.2E-06	3.9E-04	4.9E-05
TCLP Heptachlor	p-sv	373	0.0003	30000	3.0E-02		9E-06	6.5E-07	2.4E-04	3.0E-05
TCLP Pyridine	p-v	79	20.00	30	3.0E-05		0.0006	4.3E-05	3.4E-03	4.3E-04

Ambient Impact Calculation

Waste Code	Parameter	volatile or semi volatile	Grams/ second out	Ambient Impact ug/m3	Avg. Time	IRSL or ITSL ug/m3	Source	% of IRSL or ITSL
	Air							
D020	TCLP Chlorodane	p-sv	1.1E-06	8.9E-06	annual	0.04	Default	0
D030	TCLP 2,4-Dinitrotoluene	p-v	4.9E-05	4.0E-04	annual	0.005	MDNR	8
D031	TCLP Heptachlor	p-sv	3.0E-05	2.4E-04	annual	0.04	Default	1
D038	TCLP Pyridine	p-v	4.3E-04	2.9E-02	24 hr	3.50	MDNR	1

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

September 30, 1994

Mr. Rajen G. Patel
Air Pollution Engineer
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Rajen:

Referencing our meeting on Monday, 09/26/94, pertaining to the changes that we would like to incorporate in the letter of conditions of our air permits, the following is submitted:

(1) List of typical chemicals (all non volatile solutions) stored in Tank #'s 7 and 10 is as follows:

* Ferrous sulfate solution
* Ferrous chloride solution
* Ferric chloride solution
* Sodium bisulfite solution
* Non-hazardous wastewater

There is no VOC emission associated with the storage of these chemicals in the tanks in question.

(2) There will be an addition of four TC organic waste codes, i.e., D020 (Chlordane), D030 (2,4-dinitrotoluene), D031 (Heptachlor), and D038 (Pyridine), to the list of waste codes acceptable for treatment as provided to you earlier. Refer to Attachment A for an updated list of waste codes acceptable for treatment. An updated summary of emissions will be forwarded to your attention upon its completion by our consulting engineer (Hands & Associates).

(3) Copy of page 19 of letter of conditions (Act 64 Permit) referencing the hazardous waste throughput of 144,000 gallons per day. Refer to Attachment B.

(4) Copy of our site plan illustrating locations of the two stacks at our facility. Please note the following:

* Stack #1 (5000 CFM scrubber for bulk treatment tank) is located about 68 feet from the nearest fenceline.

* Stack #2 (5000 CFM caustic scrubber for container

management facility is about 120 feet from the nearest fenceline. Refer to Attachment C.

(5) Dimensions of building where the stacks are located are as follows:

* Stack #1: refer to Attachment D for building dimensions.

* Stack #2: 40'L X 16'W X 16'H

(6) For condition #27 (Permit #'s C-7425 through C-7431), the sentence " Applicant shall clean all roadways and parking lots on a regular basis" is modified to read "Applicant shall clean all paved roadways and parking lots weekly."

(7) Condition #32 of permits referenced in item #6 is ambiguous for the following reasons:

(a) It is unclear whether volatile organic compounds (VOCs) reference the chemical compounds themselves or the volatile components of the organic chemicals in question.

(b) VOCs could still be analytically detected in a non-hazardous waste stream of which all TC organic constituents are below regulated limitations.

(c) Even if our carbon adsorption method (primary treatment process) effectively removed the organic constituents from a waste stream or rendered it non-hazardous by lowering the organic levels to below regulated limits, the treated batch which is transferred from the primary to the secondary vessels will still contain organics in the adsorbed form, i.e., embedded in the activated carbon powder matrix.

Therefore, should there be some kind of VOC restrictions in the secondary vessels (#'s 18-21), it would be more practical to have, for instance, an upper limit of 1% by weight TOC (wastewater standard as defined in 40 CFR 268.2(f)) for all wastes accepted in the secondary vessels.

As a separate issue of which terms and conditions can be addressed during the second stage of our air permit application process, please be aware that we are planning on installing a treatment vessel (identified as Tank #27 in the listing of tanks vented through control system #1, Section 9 of Permit Modification Package) to be used for managing F006 and F019 wastes, listed-filtercake-generating characteristic wastes, and all the wastes referenced in Attachment E. The later ones are listed hazardous wastes (including wastes generated as a result of the mixture and derived from rule) which contain less than 1% by weight total organic carbon (TOC) and are otherwise characteristically similar to those wastes currently being accepted for treatment at the facility. This tank is a fiberglass-reinforced plastic (FRP) cone-bottomed tank with a capacity of 20,000 gallons. Its installation will hinge upon MDNR's approval.

Should you have any questions concerning this submittal, please feel free to contact me.

Truly yours,

Tien H. Pham
Manager, Technical Services

cc: Mr. Frank Biermann, Dynecol, Inc.
WCAPCD-Permit File

ATTACHMENT A

TABLE C.2
PART A
CHARACTERISTIC AND LISTED WASTES TREATED AT DYNECOL

Waste Description	Hazardous Waste Code	Basis for Hazard Designation
Waste pickle liquor from steel finishing operations	K062	Corrosive and Toxic
Wastewater treatment sludge from electroplating operations	F006*	Toxic
Wastewater treatment sludge from chemical conversion coating of aluminum	F019*	Toxic
Liquid solutions	D002	Corrosive
Solutions and sludges	D004	TC toxic for arsenic
Solutions and sludges	D005	TC toxic for barium
Solutions and sludges	D006	TC toxic for cadmium
Solutions and sludges	D007	TC toxic for chromium
Solutions and sludges	D008	TC toxic for lead
Solutions and sludges	D009	TC toxic for mercury
Solutions and sludges	D010	TC toxic for selenium
Solutions and sludges	D011	TC toxic for silver
Solutions and sludges	001D	TC toxic for copper
Solutions and sludges	003D	TC toxic for zinc
Solutions and sludges	D018	TC toxic for benzene
Solutions and sludges	D019	TC toxic for carbon tetrachloride
Solutions and sludges	D020	TC toxic for chlordane
Solutions and sludges	D021	TC toxic for chlorobenzene
Solutions and sludges	D022	TC toxic for chloroform
Solutions and sludges	D023	TC toxic for o-Cresol
Solutions and sludges	D024	TC toxic for m-Cresol
Solutions and sludges	D025	TC toxic for p-Cresol
Solutions and sludges	D026	TC toxic for cresol
Solutions and sludges	D027	TC toxic for 1,4-Dichlorobenzene
Solutions and sludges	D028	TC toxic for 1,2-Dichloroethane
Solutions and sludges	D029	TC toxic for 1,1-Dichloroethylene
Solutions and sludges	D030	TC toxic for 2,4-Dinitrotoluene
Solutions and sludges	D031	TC toxic for heptachlor
Solutions and sludges	D032	TC toxic for hexachlorobenzene
Solutions and sludges	D033	TC toxic for hexachlorobutadiene
Solutions and sludges	D034	TC toxic for hexachloroethane
Solutions and sludges	D035	TC toxic for methyl ethyl ketone
Solutions and sludges	D036	TC toxic for nitrobenzene
Solutions and sludges	D037	TC toxic for pentachlorophenol
Solutions and sludges	D038	TC toxic for pyridine
Solutions and sludges	D039	TC toxic for tetrachloroethylene
Solutions and sludges	D040	TC toxic for trichloroethylene
Solutions and sludges	D041	TC toxic for 2,4,5-trichlorophenol
Solutions and sludges	D042	TC toxic for 2,4,6-trichlorophenol
Solutions and sludges	D043	TC toxic for vinyl chloride

* The sludges that are generated from treating these wastes at Dynecol are listed wastes.
* Accepted only if reactive cyanide level is less than 20 ppm

ATTACHMENT B

PART IV

CONDITIONS FOR STORAGE IN TANKS AND TREATMENT IN TANKS AND FILTER PRESSES

A. COVERAGE OF LICENSE AND DESIGN CAPACITY

The hazardous waste tank storage and treatment areas designated as the Tank Storage Building, Primary Treatment Area, Secondary Treatment Area, and Filter Press Building on Figure A.2 are covered by this license. Any expansion or enlargement beyond the facility boundary shown on Figure A.2 or beyond the tank storage design capacities authorized in Conditions IV.B.1. and 2. of this license or the 144,000 gallons per 24-hour day treatment design capacity requires a construction permit from the Director. Figure A.2 is incorporated into this license in Attachment 7.

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee may store no more than a total volume of 61,000 gallons of the hazardous wastes listed in Attachment 10 in the four tanks identified as Tanks 7, 8, 9, and 10 in Table D.1 of Attachment 11 and Figure A.2 in Attachment 7, subject to the terms of this license, until such time as Tanks 8 and 9 are closed pursuant to Condition III.A.3. of this license.

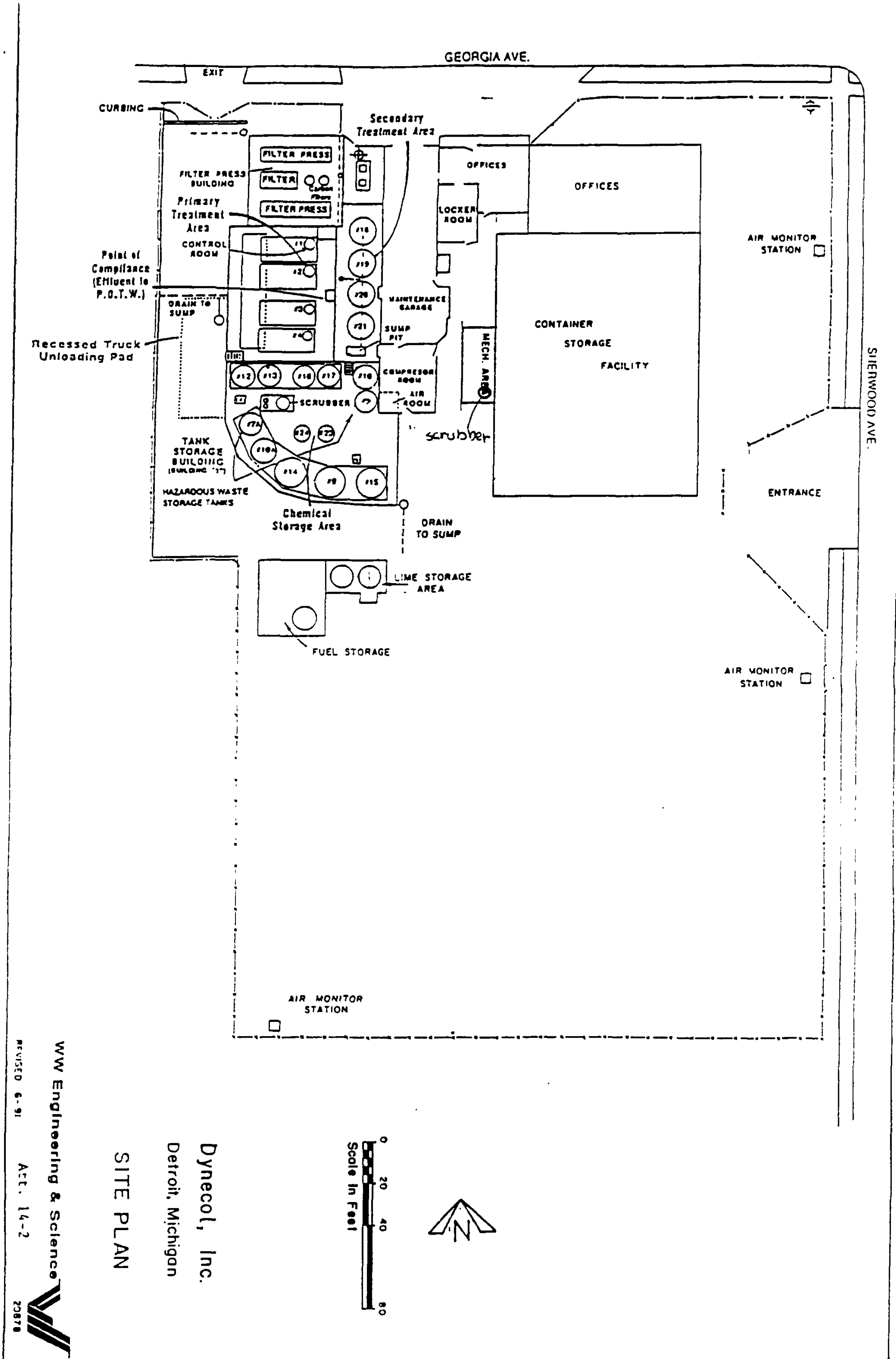
2. Following closure of Tanks 8 and 9, the licensee may store no more than a total volume of 22,000 gallons of hazardous waste in the two tanks identified as Tanks 7 and 10 in Table D.1 of Attachment 11 and Figure A.2 in Attachment 7, subject to the terms of this license.

3. The licensee may treat no more than a total volume of 144,000 gallons per 24-hour day of the hazardous wastes listed in Attachment 10 in the eight tanks identified as Tanks 1, 2, 3 and 4 (primary treatment), and 18, 19, 20 and 21 (secondary treatment) in Table D.1 of Attachment 11 and Figure A.2 in Attachment 7, subject to the terms of this license.

4. The licensee may operate the hazardous waste treatment system 24 hours per day, 7 days per week, for no more than 312 days per year, or 7,488 hours per year.

C. DESIGN, CONTAINMENT AND ASSESSMENT OF TANK SYSTEMS

The licensee shall operate and maintain all tanks and associated appurtenances, including piping and secondary containment structures, in accordance with the applicable requirements of R 299.9615 and 40 CFR §264.192, §264.193 and §264.194 which are adopted by reference in R 299.11003, and the attached plans and specifications, Attachment 11 of this license.



Dynecol, Inc.
Detroit, Michigan

SITE PLAN

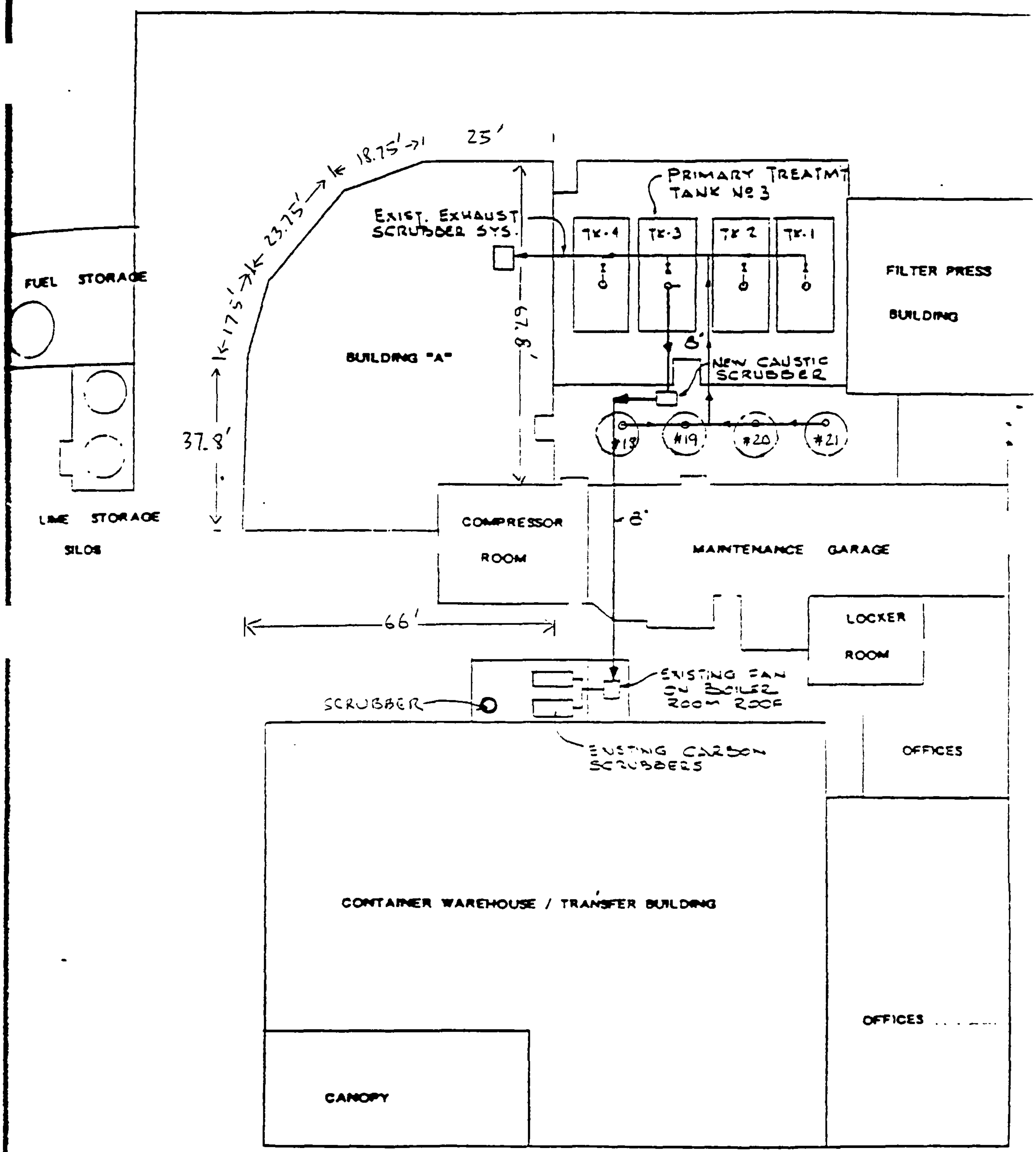
WW Engineering & Science

REVISED 6-91

Att. 14-2

20878

ATTACHMENT D



EXHAUST DUCTWORK PLAN

ATTACHMENT E

Section C
11/01/94

TABLE C.2
PART B
OTHER LISTED HAZARDOUS WASTE TREATED AT DYNECOL

F007	K001	K046	P001	P049	P104
F008	K002	K047	P002	P050	P105
F009	K003	K048	P003	P051	P106
F010	K004	K049	P004	P054	P107
F011	K005	K050	P005	P056	P108
F012	K006	K051	P006	P057	P109
F020	K007	K052	P007	P058	P110
F021	K008	K060	P008	P059	P111
F022	K009	K061	P009	P060	P112
F023	K010	K062	P010	P062	P113
F024	K011	K069	P011	P063	P114
F025	K013	K071	P012	P064	P115
F026	K014	K073	P013	P065	P116
F027	K015	K083	P014	P066	P118
F028	K016	K084	P015	P067	P119
F032	K017	K085	P016	P068	P120
F034	K018	K086	P017	P069	P121
F035	K019	K087	P018	P070	P122
F039	K020	K093	P020	P071	P123
	K021	K094	P021	P072	
	K022	K095	P022	P073	
	K023	K096	P023	P074	
	K024	K097	P024	P075	
	K025	K098	P026	P076	
	K026	K099	P027	P077	
	K027	K100	P028	P078	
	K028	K101	P029	P081	
	K029	K102	P030	P082	
	K030	K103	P031	P084	
	K031	K104	P033	P085	
	K032	K105	P034	P087	
	K033	K106	P036	P088	
	K034	K111	P037	P089	
	K035	K112	P038	P092	
	K036	K113	P039	P093	
	K037	K114	P040	P094	
	K038	K115	P041	P095	
	K039	K116	P042	P096	
	K040		P043	P097	
	K041		P044	P098	
	K042		P045	P099	
	K043		P046	P101	
	K044		P047	P102	
	K045		P048	P103	

TABLE C.2
PART B
OTHER LISTED HAZARDOUS WASTE TREATED AT DYNECOL

U001	U045	U089	U133	U176	U225
U002	U046	U090	U134	U177	U226
U003	U047	U091	U135	U178	U227
U004	U048	U092	U136	U179	U228
U005	U049	U093	U137	U180	U234
U006	U050	U094	U138	U181	U236
U007	U051	U095	U139	U182	U237
U008	U052	U096	U140	U183	U238
U009	U053	U097	U141	U184	U239
U010	U055	U098	U142	U185	U240
U011	U056	U099	U143	U186	U243
U012	U057	U101	U144	U187	U244
U013	U058	U102	U145	U188	U246
U014	U059	U103	U146	U189	U247
U015	U060	U105	U147	U191	U248
U016	U061	U106	U148	U192	U249
U017	U062	U107	U149	U193	F001
U018	U063	U108	U150	U194	F002
U019	U064	U109	U151	U196	F003
U020	U066	U110	U152	U197	F004
U021	U067	U111	U153	U200	F005
U022	U068	U112	U154	U201	
U023	U069	U113	U155	U202	
U024	U070	U114	U156	U203	
U025	U071	U115	U157	U204	
U026	U072	U116	U158	U205	
U027	U073	U117	U159	U206	
U028	U074	U118	U160	U207	
U029	U075	U119	U161	U208	
U030	U076	U120	U162	U209	
U031	U077	U121	U163	U210	
U032	U078	U122	U164	U211	
U033	U079	U123	U165	U213	
U034	U080	U124	U166	U214	
U035	U081	U125	U167	U215	
U036	U082	U126	U168	U216	
U037	U083	U127	U169	U217	
U038	U084	U128	U170	U218	
U039	U085	U129	U171	U219	
U041	U086	U130	U172	U220	
U043	U087	U131	U173	U221	
U044	U088	U132	U174	U222	

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

July 29, 1994

Mr. Rajen G. Patel
Air Pollution Engineer
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Rajen:

In reference to your suggestion during our meeting on Tuesday, 07/26/1994, pertaining to a summary of all the changes that we would like to make to the letter of conditions of our air permits, the following is submitted:

(1) Suggested language for letter of special conditions of Permit numbers C-6917, and C-6977 through C-6980. Refer to Attachment A. Additionally, Permit C-6917 should also reference the four primary treatment tanks (Numbers 1 through 4).

(2) Suggested language for letter of special conditions of Permit numbers C-7425 through C-7431. Refer to Attachment B.

(3) Suggested language for letter of special conditions of Permit numbers C-8572 through C-8574, C-9403, C-9404, and C-9446 through C-9449. Refer to Attachment C. In addition, please be advised of the following:

   (a) The words "organic vacuum process vessel" in the source description part should be changed to "vacuum process vessel" since it is used for both organic and inorganic materials.

   (b) The words "two-speed exhaust fan" in the source description part should be changed to just "building exhaust fan" since it is actually a single-speed fan.

   (c) The drum shredder unit can be deleted from the permit since it was never purchased for use in the container facility.

Should you have any questions, please feel free to contact me.

Truly yours,

Tien H. Pham
Manager, Technical Services

cc: Mr. Frank Biermann, Dynecol, Inc.
Mr. Dave Lobbestael, Dynecol, Inc.
WCAPCD-Permit File

ATTACHMENT A

SUGGESTED LANGUAGE FOR LETTER OF CONDITIONS (PERMIT #'S C-6917, C-6977 thru C-6980)

SPECIAL CONDITIONS

16. The facility shall comply with all the general and specific conditions and future amendments of the Hazardous Waste Disposal Facility operating license issued to you on May 2, 1990 by the Michigan Department of Natural Resources, Waste Management Division, under the Hazardous Waste Management Act, 1979 P.A. 64. **(Change was made to reflect the most current issuance date)**

17. The facility shall accept for disposal only the hazardous waste codes approved by MDNR permit referenced above.

18. Impacts of the non-criteria pollutant hydrochloric acid emissions from the caustic recycle scrubber stack, at the property line shall not exceed the acceptable ambient concentrations of 70 ug/cubic meter for hydrochloric acid, 10 ug/cubic meter for sulfuric acid, and 50 ug/cubic meter for nitric acid.

19. The facility must comply with MDNR R336.1373 to control fugitive dust.

20. The Division reserves the authority to conduct or require any odor testing or other pollutant testing at applicant's facility and at applicant's expense. Any required tests shall be performed utilizing methods acceptable to this Division and with prior Division approval.

21. After a determination by and written notification from the Division Director that emissions from the applicant's operation(s) are causing unreasonable interference with the common public right to live free from foul or noxious odors, the applicant shall immediately cease the operation(s) until the cause of the odors can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a

special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting, the Health Officer may continue, modify or rescind the cessation order.

22. Throughput design capacity of the facility to process hazardous wastes referenced in Condition 17 shall not exceed 144,000 gallons per day or 44,928,000 gallons per year. **(Reason for change: the throughput design capacity of 60,000 gallons per day pertained to our Act 64 license that was issued in March 1982. At that time, the daily throughput of 60,000 gallons was based on, but not limited to operations of 14 hours per day. This was amended in 1986 (See letter of 07/25/86) to reflect a 24-hour operation or 144,000 gallons per day.)**

23. Applicant shall not process hazardous wastes in the primary treatment tanks unless the caustic recycle scrubber system is installed and operating properly. **(The term "neutralization" is changed to "primary treatment" in order to adopt a common terminology system with our Act 64 Permit.)**

24. Applicant shall maintain the pH value of the caustic recycle scrubber solution a minimum of 10.

25. Applicant shall not operate the treatment process for more than 24 hours per day and 312 days per year, or 7488 hours per year. **(The term "neutralization" is changed to "treatment" since it only represented one of our treatment methods.)**

26. Applicant shall exhaust the emissions from tank Nos. 12, 13, 16, 17 through the caustic recycle scrubber system.

27. The exhaust emissions from the caustic recycle scrubber shall be discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 20 inches at an exit point not less than 70 feet above grade level.

28. There shall be no visible emissions from the caustic recycle scrubber stack.

ATTACHMENT B

SUGGESTED LANGUAGE FOR LETTER OF CONDITIONS
(PERMIT #'S C-7425 through C-7431)

SPECIAL CONDITIONS

16. This condition should be dropped due to the fact that, since both primary and secondary tanks are scrubbed, it serves no air control purpose whatsoever.

17. This condition should be dropped for the same reason as described in Condition 16.

18. This condition should be dropped for the same reason as described above.

19. This condition should be <u>dropped</u> for the following reasons:
- **(a) The 144,000 gallons of hazardous wastes per day throughput limitation is set by our Act 64 Permit and it pertains to the total design capacity of our <u>whole</u> treatment system.**
- **(b) Should that maximum volume (144,000 GPD) of incoming hazardous wastes be reached within a certain day, the throughput for our secondary treatment process, i.e., Tanks T-18 through T-21, would end up to be significantly higher than the original volume due to addition of treatment reagents during the primary treatment process. Since the amount of reagents added is directly related to the volume, type, and characteristics of the incoming wastes accepted within a certain day, it's not possible to set a throughput limitation for just these four particular tanks.**

20. After determination by and written notification from the Division Director that emissions from this operation are causing unreasonable interference with the common public right to live free from foul and noxious odors, the applicant shall immediately cease operations until the cause of odors c can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting, the Health Officer may continue, modify, or rescind the cessation order.

21. **This condition should be <u>dropped</u> for the reason that if the lime silos and their control system, i.e., bag house and ancillary components, are properly operating and also well maintained, they will be able to safely handle an unlimited amount of lime. It is noteworthy that the though-put limit of 3,000 tons per year somehow originated from a 1989 rough estimate of the amount of lime needed yearly based on our annual sales projection and not from a design capacity standpoint.**

22. Lime silos shall not be utilized unless the fabric filter collector is correctly installed and operating properly.

23. Particulate emissions from the fabric filter collector shall not exceed 0.004 grains per dry standard cubic foot, 0.034 pounds per hour nor 0.15 tons per year.

24. There shall be no visible emissions from the operation of the lime silos and fabric filter collector.

25. There shall be no visible emissions from the operation of the secondary process tanks, Tanks T-18 through T-21.

26. Odorous emissions from the exhaust of the secondary treatment building shall not exceed 50 odor units.

27. Applicant shall clean all roadways and parking lots on a <u>regular</u> basis. Cleaning shall utilize an acceptable method such as vacuum sweeping or wet sweeping. **Note: "daily" is impractical under numerous circumstances, i.e., weather, shutdowns, etc.**

28. Applicant shall not accept material in Tanks T-18 through T-21 with a reactive cyanide content greater than 20 ppm.

29. This permit does not supersede, nor replace, the need for a current operating license as required under P.A. 64 of 1979 (Act 64). Applicant shall comply with all requirements of the current Act 64 License.

30. Exhaust flow rate for the fabric filter collector shall not exceed 1000 cubic feet per minute.

31. Fabric filter cloth area shall be a minimum of 180 square feet.

32. **This condition should be dropped since VOC protocol will be defined in air permit for the 500 CFM control on Tank #3.**

ATTACHMENT C
SUGGESTED LANGUAGE FOR LETTER OF CONDITIONS
(PERMIT #'S C-8572 - C-8574, C-9403, C9404, C-9446 - C-9449)

SPECIAL CONDITIONS

16. After a determination by and written notification from the Division Director that emissions from the bulk/transfer station or the storage building are causing unreasonable interference with the common public right to live free from foul and noxious odors, the applicant shall immediately cease operations until the cause of odors can be corrected to the satisfaction of the Division. The applicant shall not restart the operation(s) until the Director of this Division has approved the restart in writing. Information submitted by the applicant indicating the odors have been eliminated shall be evaluated by the Division as expeditiously as possible. The applicant may request the Health Officer to schedule a special meeting to consider a cessation order issued by the Director. This meeting will be held within 48 hours of the applicant's request. At that meeting, the Health Officer may continue, modify or rescind the cessation order.

17. Applicant shall not bulk or transfer any organic material unless the vapor recovery exhaust and the drum unloading hood exhaust from the bulk/transfer station are vented through a carbon adsorption system which has been installed, and is operating properly.

18. Applicant shall not bulk or transfer any inorganic material unless the vapor recovery exhaust and the drum unloading hood exhaust from the bulk/transfer station are vented through a wet caustic scrubber system.

19. Exhaust from the carbon adsorption system shall be discharged through a wet scrubber. Exhaust flow rate from the wet scrubber shall be 5000 cfm ($\pm$10%).

20. Exhaust from the bulk/transfer station shall be discharged unobstructed vertically upwards from a stack not less than 70 feet above grade, nor more than 20 inches in diameter.

21. There shall be no visible emissions from the operation of bulk/transfer station or the storage building.

22. Emissions of Tetrachloroethylene from the bulk/transfer station exhaust shall not exceed 0.21 grams per second nor 1.66 pounds per hour.

23. Emissions of Trichloroethylene from the bulk/transfer station exhaust shall not exceed 0.07 grams per second nor

0.55 pounds per hour.

24. Emissions of Methylene Chloride from the bulk/transfer station exhaust shall not exceed 0.12 grams per second nor 0.95 pounds per hour.

25. Emissions of Carbon Tetrachloride from the bulk/transfer station exhaust shall not exceed 0.005 grams per second nor 0.04 pounds per hour.

26. Emissions of Benzene from the bulk/transfer station exhaust shall not exceed 0.017 grams per second nor 0.13 pounds per hour.

27. Emissions of Acrylonitrile from the bulk/transfer station exhaust shall not exceed 0.001 grams per second nor 0.01 pounds per hour.

28. Emissions of Chloroform from the bulk/transfer station exhaust shall not exceed 0.005 grams per second nor 0.04 pounds per hour.

29. Emissions of Epichlorohydrin from the bulk/transfer station exhaust shall not exceed 0.10 grams per second nor 0.79 pounds per hour.

30. Emissions of Ethylene Dichloride from the bulk/transfer station exhaust shall not exceed 0.011 grams per second nor 0.09 pounds per hour.

31. Emissions of Formaldehyde from the bulk/transfer station exhaust shall not exceed 0.01 grams per second nor 0.079 pounds per hour.

32. Emissions of 1,1,1,2 Tetrachloroethane from the bulk/transfer station exhaust shall not exceed 0.009 grams per second nor 0.069 pounds per hour.

33. Emissions of 1,1,2,2 Tetrachloroethane from the bulk/transfer station exhaust shall not exceed 0.002 grams per second nor 0.02 pounds per hour.

34. Emissions of p-Toluidine from the bulk/transfer station exhaust shall not exceed 0.004 grams per second nor 0.03 pounds per hour.

35. Total Volatile Organic Compound (VOC) emissions from the bulk/transfer station exhaust shall not exceed 12.60 pounds per hour nor 31.45 tons per year.

36. Emissions of Hydrochloric Acid from the bulk/transfer station exhaust shall not exceed 0.016 grams per second nor 0.12 pounds per hour.

37. Emissions of Sulfuric Acid from the bulk/transfer station exhaust shall not exceed 0.149 grams per second nor 1.18 pounds per hour.

38. Emissions of Hydrogen Cyanide from the bulk/transfer station exhaust shall not exceed 0.023 grams per second nor 0.18 pounds per hour.

39. Applicant shall perform stack testing within the trial operating period for the compounds listed in Conditions 22 through 38 to verify compliance with the emission limits specified. Stack testing shall be at the applicant's expense and with prior approval of this Division. Written notification of the testing shall be given to this Division a minimum of 10 days prior to testing. A written report containing the testing results and operating data shall be submitted to this Division within 45 days of completion of the testing.

40. Emissions of 2-Nitropropane from the bulk/transfer station exhaust shall not exceed 0.08 grams per second nor 0.63 pounds per hour.

41. Emissions of n-Butyl Alcohol from the bulk/transfer station exhaust shall not exceed 0.35 grams per second nor 2.77 pounds per hour.

42. Emissions of o-Dichlorobenzene from the bulk/transfer station exhaust shall not exceed 0.71 grams per second nor 5.62 pounds per hour.

43. Emissions of Carbon Disulfide from the bulk/transfer station exhaust shall not exceed 0.24 grams per second nor 1.90 pounds per hour.

44. Applicant may bulk only those wastes which are identified by waste codes approved under Act 64 Permit. **(Change: Flash point limitation of 90 deg F on waste code D001 should be waived for the following reasons:**
   (1) The container storage building is designed to meet all applicable BOCA, NFPA, and NEC codes for handling of flammable liquid wastes, i.e., Class I, II, III liquids.
   (2) The waste bulking/transfer area is equipped with air emission control and fire protection systems that are operating properly.
   (3) Bulking of wastes is performed by negative pressure and not by mechanical means, i.e, pump.
   (3) All electrical components within the building are explosion-proof.
   (4) Bulking, waste screening, and compatibility verification protocols, and also procedures in dealing

with ignitable/reactive/incompatible wastes, as described in our Act 64 Permit, are strictly followed.

(5) No direct relationship between flash point and our ability to meet air quality standards.

45. Applicant may store only those wastes which are permitted under Act 64 Permit.

46. Applicant shall follow procedures for dealing with ignitable, reactive, and incompatible wastes, as defined in the Act 64 Permit.

47. Applicant shall conduct compatibility testing prior to bulking any wastes to determine that there will be no environmentally adverse reactions between the materials which will be bulked.

48. Applicant shall perform odor testing and testing for total Volatile Organic Compounds from the storage building exhaust during the trial operating period to determine that there will be no adverse environmental impacts from this exhaust. Stack testing shall be at the applicant's expense and with prior approval of this Division. Written notification of the testing shall be given to this Division a minimum of 10 days prior to the testing. A written report containing the testing results and operating data shall be submitted to this Division within 45 days of completion of the testing.

49. Carbon adsorption system shall consist of a carbon bed containing a minimum of 1800 pounds of activated carbon. Unit shall be equipped with a saturation indicator, i.e., a Flame Ionization Detector (FID) and a control system that automatically switches the process air exhaust to a standby carbon bed prior to breakthrough. Applicant shall regenerate the saturated carbon bed after the point of breakthrough detection. **(Change was made to more specifically describe the saturation indicator and its function.)**

50. Cyanide wastes shall be stored in a bay which is totally segregated from the acid waste bays. Acidic wastes shall not be stored in immediately adjacent or opposite bays. Bays shall be labelled in a highly visible manner.

51. Applicant shall not bulk wastes that have a reactive cyanide content greater than 10 ppm.

52. Applicant shall re-install the bung or replace the head immediately after emptying or removing waste material from the drum, unless cleaning is required.

53. **This condition should be <u>dropped</u> due to the fact that the bulking limitation of 276,000 gallons again arose from an estimated sales budget number that has no relevance to**

air control capabilities.

54. The following wastes and waste categories shall not be accepted at this facility:

    A. Wastes containing dioxins.
    B. Wastes containing greater than 50 ppm PCB's.
    C. Radioactive wastes.
    D. Explosive wastes.
    E. Wastes in pressure containers.
    F. Wastes which could potentially result in an acute worker or neighborhood risk in the event of a ruptured or spilled container.

55. Exhaust from the organic drum wash area shall be exhausted through activated carbon bed.

56. Exhaust from the inorganic drum wash area shall be exhausted through caustic wet scrubber.

57. Exhaust from the scrubber shall not exceed 50 odor units per cubic foot at the stack if the stack is at least minimum stack height as defined in Appendix C of the Wayne County Air Pollution Control Ordinance. Exhaust from the scrubber shall not exceed 150 odor units per cubic foot at the stack if the stack height is at least good engineering practice stack height as defined in Appendix C of the Wayne County Air Pollution Control Ordinance.

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

July 27, 1994

Mr. Rajen G. Patel
Air Pollution Engineer
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Mr. Patel:

Please find enclosed the five installation permits for the following:

(1) Primary Treatment Tank #1

(2) Primary Treatment Tank #2

(3) Primary Treatment Tank #3

(4) Primary Treatment Tank #4

(5) Hazardous Waste Tank #7

(6) Hazardous Waste Tank #10

(7) Primary Treatment Tank #3 - TC Organics

Should you have any questions, please feel free to contact me.

Yours truly,

Tien H. Pham
Manager, Technical Services

cc: WCAPCD-File

PERMIT NO.

Establishment	
Source Id. No.	
SSC No.	Cashier

WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, Michigan 48201-2558
Telephone No. (313) 832-5003

INSTALLATION PERMIT

Ow DYNECOL, INC Telephone No. (313) 571-7141
Mailing Address 6520 GEORGIA, DETROIT, MI 48211
Installer Telephone No.
Address

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment PRIMARY TREATMENT TANK # 1 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer Model Rating
2. Description of Emission Control Equipment REFERENCE TO C-6917
   Name of Manufacturer HEIL Model 734-XL Rating 5000 CFM
3. (New, Existing) Stack or Vent I.D. or Size 20" Height (ground to top) ~~65 FEET~~ 70 FT
4. Signature of Owner or Agent [signature] Title TECHNICAL SERV. MANAGER
5. Print Name of Owner or Agent MR. TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by Director / Date with conditions in letter dated

FEE BASED ON EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

THIS PERMIT IS NOT A CERTIFICATE OF OPERATION

INSTRUCTIONS and REQUIREMENTS: Refer to Appendix B of the Wayne County Air Pollution Control Ordinance.

APC-22A Revised 1991

LC N OF INSTALLATION (Street address and city) (Please Print)

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AREA / GRID
PERMIT NO.

Establishment	
Source Id. No.	
SSC No.	Cashier

WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, Michigan 48201-2558
Telephone No. (313) 832-5003

INSTALLATION PERMIT

Owner DYNECOL, INC. Telephone No. (313) 571-7141
Mailing Address 6520 GEORGIA, DETROIT, MI 48211
Installer Telephone No.
Address

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment PRIMARY TREATMENT TANK #2 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer Model Rating
2. Description of Emission Control Equipment REFERENCE PERMIT # C-6917
   Name of Manufacturer HEIL Model 734-XL Rating 5000 CFM
3. (New, Existing) Stack or Vent I.D. or Size 20" Height (ground to top) ~~65 FEET~~ 70 FEET
4. Signature of Owner or Agent [signature] Title TECH SERVICE MANAGER
5. Print Name of Owner or Agent MR. TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by Director / Date with conditions in letter dated

FEE ED ON EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

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WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, Michigan 48201-2558
Telephone No. (313) 832-5003

INSTALLATION PERMIT

Establishment

Source Id. No.

SSC No.

Cashier

O DYNECOL INC. Telephone No. (313) 571-7141
Mailing Address 6520 GEORGIA, DETROIT, MI 48211
Installer Telephone No.
Address

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment PRIMARY TREATMENT TANK NO. 3 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer Model Rating
2. Description of Emission Control Equipment REFER PERMIT C-6517 & REFER MODIFICATION APPLICATION
   Name of Manufacturer HEIL Model 734-XL Rating 5000 CFM
3. (New, Existing) Stack or Vent I.D. or Size 20" Height (ground to top) ~~65 FEET~~ 70 FT.
4. Signature of Owner or Agent [signature] Title TECH. SERV MANAGE
5. Print Name of Owner or Agent MR. TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by ______ Director / Date with conditions in letter dated

FEE BASED ON EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

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APC-22A Revised 1991

L N OF INSTALLATION (Street address and city) (Please Print)

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AREA / GRID
PERMIT NO.

WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, Michigan 48201-2558
Telephone No. (313) 832-5003

INSTALLATION PERMIT

Establishment

Source Id. No.

SSC No.

Cashier

Owner DYNECOL, INC. Telephone No. (313) 571-7141
Mailing Address 6520 GEORGIA, DETROIT, MI 48211
Installer Telephone No.
Address

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment PRIMARY TREATMENT TANK # 4 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer Model Rating
2. Description of Emission Control Equipment REFERENCE PERMIT NO. C-6517
   Name of Manufacturer HEIL Model 734-XL Rating 5000 CFM
3. (New, Existing) Stack or Vent I.D. or Size 20" Height (ground to top) ~~65 FEET~~ 70 FT.
4. Signature of Owner or Agent [signature] Title TECH. SERVICE MANAGER
5. Print Name of Owner or Agent MR. TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by ______ Director / Date with conditions in letter dated

F ED ON EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

THIS PERMIT IS NOT A CERTIFICATE OF OPERATION

INSTRUCTIONS and REQUIREMENTS: Refer to Appendix B of the Wayne County Air Pollution Control Ordinance.

APC-22A Revised 1991

		PERMIT NO.
WAYNE COUNTY HEALTH DEPARTMENT Air Pollution Control Division 640 Temple Street, Suite 700 Detroit, Michigan 48201-2558 Telephone No. (313) 832-5003	Establishment	
	Source Id. No.	
INSTALLATION PERMIT	SSC No.	Cashier

Owner DYNECOL, INC. Telephone No. (313) 571-7141

Mailing Address 6520 GEORGIA, DETROIT, MI 48211

Installer ______ Telephone No. ______

Address ______

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment HAZARDOUS WASTE STORAGE TANK #7 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer ______ Model ______ Rating ______
2. Description of Emission Control Equipment NO CONTROL
   Name of Manufacturer ______ Model ______ Rating ______
3. (New, Existing) Stack or Vent: I.D. or Size ______ Height (ground to top) ______
4. Signature of Owner or Agent [signature] Title TECH. SERVICE MANA
5. Print Name of Owner or Agent Mr TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by ______ (Director) / (Date) with conditions in letter dated ______

FEE BASED ON ______ EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

THIS PERMIT IS NOT A CERTIFICATE OF OPERATION

INSTRUCTIONS and REQUIREMENTS: Refer to Appendix B of the Wayne County Air Pollution Control Ordinance.

APC-22A Revised 1991

ON OF INSTALLATION (Street address and city) (Please Print) | *For office use only* AREA / GRID

		PERMIT NO.
WAYNE COUNTY HEALTH DEPARTMENT Air Pollution Control Division 640 Temple Street, Suite 700 Detroit, Michigan 48201-2558 Telephone No. (313) 832-5003	Establishment	
	Source Id. No.	
INSTALLATION PERMIT	SSC No.	Cashier

Owner DYNECOL INC. Telephone No. (313) 571-7141

Mailing Address 6520 GEORGIA, DETROIT, MI 48211

Installer ______ Telephone No. ______

Address ______

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment HAZARDOUS WASTE STORAGE TANK #10 (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer ______ Model ______ Rating ______
2. Description of Emission Control Equipment NO CONTROL
   Name of Manufacturer ______ Model ______ Rating ______
3. (New, Existing) Stack or Vent: I.D. or Size ______ Height (ground to top) ______
4. Signature of Owner or Agent [signature] Title TECH SERVICE MANA
5. Print Name of Owner or Agent Mr- TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by ______ (Director) / (Date) with conditions in letter dated ______

SED ON ______ EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

THIS PERMIT IS NOT A CERTIFICATE OF OPERATION

INSTRUCTIONS and REQUIREMENTS: Refer to Appendix B of the Wayne County Air Pollution Control Ordinance.

APC-22A Revised 1991

LOCATION OF INSTALLATION (Street address and city) (Please Print)

For office use only

AREA / GRID

PERMIT NO.

Establishment

Source Id. No.

SSC No.

Cashier

WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, Michigan 48201-2558
Telephone No. (313) 832-5003

INSTALLATION PERMIT

Owner DYNECOL, INC. Telephone No. (313) 571-7141

Mailing Address 6520 GEORGIA, DETROIT, MI 48211

Installer Telephone No.

Address

(Circle One) To [Install] [Construct] [Reconstruct] [Relocate] [Alter] [Modify the Use of a Process]

Designate whether this application is for process equipment or emission control equipment by circling (1) or (2) below.

1. Description of Process Equipment PRIMARY TREATMENT TANK #3 - TC ORGANICS (e.g. Boiler, Incinerator, Other)
   Name of Manufacturer Model Rating
2. Description of Emission Control Equipment CAUSTIC SCRUBBER
   Name of Manufacturer MET PRO Model FW-300-20 Rating 500 CFM
3. (New, Existing) Stack or Vent I.D. or Size Height (ground to top) 70 FEET
4. Signature of Owner or Agent [signature] Title TECH. SERVICE MANAG
5. Print Name of Owner or Agent MR. TIEN PHAM

DO NOT WRITE BELOW THIS LINE

Approval by / with conditions in letter dated
Director Date

FEE BASED ON EXAMINATION FEE: $ 20.00 INSPECTION FEE: $ 20.00

THIS PERMIT IS NOT A CERTIFICATE OF OPERATION

INSTRUCTIONS and REQUIREMENTS: Refer to Appendix B of the Wayne County Air Pollution Control Ordinance.

Revised 1991

7/26.

- Get Signature
- Control equip for tank 7 & 10.
- process for scrubber
- Stack data ?
  Model Rating on all.

RP.

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

November 19, 1993

Mr. Rajendra K. Sinha
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Mr. Sinha:

SUBJECT: Dynecol, Inc.
Comments to WCAPCD's Request for Resubmittal of
Permit Modification Application Package

In response to your letter of November 15, 1993, concerning a request for our resubmittal of the Permit Modification Application Package, Dynecol has the following comments.

Based on the facts that our Permit Modification Application Package was hand-delivered by our Facility Manager, Mr. Dave Lobbestael, to Ms. Lillian Woolley on July 23, 1993, and that Mr. Thomas Vincent did acknowledge his contact with Ms. Woolley in early November to get her input on where the application package might be kept prior to her departure, Dynecol finds WCAPCD's statement on "lack of knowledge" of this permit package to in fact meaning that WCAPCD has lost our application along with all the original supporting drawings and information.

Dynecol nevertheless agrees to resubmit, at considerable additional expense, a second Permit Modification Application Package after you provide some written commitment on such important issues as staff assignment and timetable for a complete permit review and approval. Who has been assigned to redo our permits and what is the target date for completion? Simply stated, it is time for WCAPCD to show solid evidence of a commitment to completing the task at hand.

Yours truly,

Tien H. Pham

Tien H. Pham
Manager, Technical Services

cc: Mr. Frank Biermann, Dynecol, Inc.
Mr. Dave Lobbestael, Dynecol, Inc.
WCAPCD File

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DEPARTMENT OF PUBLIC HEALTH
WAYNE COUNTY

EDWARD H. McNAMARA
County Executive
Bernard N. Kilpatrick
Assistant County Executive
Cynthia Taueg, MPH
Director-Health Officer
Donald Lawrenchuk, M.D., MPH
Medical Director

November 15, 1993

Mr. Tien H. Pham
Manager, Technical Services
Dynecol, Incorporated
6520 Georgia Street
Detroit, Michigan 48211

Dear Mr. Pham:

This letter is in response to your letter of November 5, 1993 regarding your concerns and disappointment with the Division for the delay in the permit review which you submitted on July 23, 1993 to Ms. Lillian Woolley. I acknowledge your concerns in the delay, but at this time the Division has no knowledge of the permit package which you gave to Ms. Woolley and now Ms. Woolley is no longer with the Division. That causes a delay in the permit review. At your request we searched the entire Division for the permit package and check. We are unable to locate that package which you submitted in July. Therefore, to expedite this permit application review and approval, I am asking that you resubmit the package as soon as possible. If you have a receipt for your submitted check or any document, please submit a copy of that so we can locate the check here.

Your second concern is a site visit by two Division Compliance Engineers, Messrs. Naas and Baig on June 2, 1993, at your facility. You raised concerns regarding the purpose of their visit and also Mr. Naas's observation regarding facility operation which is included in his memorandum to the file. In your letter you have demanded that Mr. Naas's memo should be removed from the Division regulatory file. In response to your demand, I disagree with you because both compliance engineers are staff members in the enforcement section and have responsibility to make recommendations to the Division to improve the performance of a facility. I have reviewed Mr. Naas's memo of June 3, 1993 very thoroughly and also discussed it with him and Mr. Tom Vincent, Area Inspector, the intent of the memo to the file. I do not see any errors of facts or unsubstantiated allegations regarding the facility operation.

Actually Mr. Naas has made several comments to the Division staff for improvement and clarification of Dynecol's operation and permit conditions. During his visit several samples of liquid waste were collected and brought to the agency for analysis. The Division collects the samples to monitor the waste contaminants and will share the analysis results if requested by the company.

All of his conclusions and recommendations to the Division staff are good and the Division is taking necessary steps to improve certain permit condition language so they become clear. I want to let you know your demand to remove this memo will not be accepted. In your letter you mentioned that under the Freedom of Information Act you received a copy of Mr. Naas's memo. According to Mr. Howard Murray, Public Relations Officer, he did not provide a copy of this memo. Therefore, I am asking you to please inform me how did you receive a copy of this in-house memorandum.

If you have any questions regarding this letter or content of the memo feel free to contact me at (313) 832-5000.

Sincerely,

Rajendra K. Sinha

Rajendra K. Sinha
Director

RKS/cc

DYNECOL

DYNECOL, INC.

6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7141
FAX: (313) 571-7190

November 05, 1993

Mr. Rajendra Sinha
Wayne County Department of Public Health
Air Pollution Control Division
640 Temple Street, Suite 700
Detroit, MI 48201

Dear Mr. Sinha:

SUBJECT: Dynecol, Inc.
Request for Timely Review of Permit Modification Application Package (07/23/93)
Comments to Mr. Jamal Naas's Facility Visit on 06/02/93 and Memo of 06/03/93

This correspondence is written to express our concerns and disappointment with the delay in the engineering review of our Permit Modification Application Package which was sent to Ms. Lillian Woolley on 07/23/93. This was submitted at considerable expense to Dynecol and in direct concert with Ms. Woolley's advice and direction. Per our conversation with Mr. Thomas Vincent, we understand that the review of our application has been put on hold due to staff shortage. Since our original efforts for a timely submittal of this application evolved from our strong desire to not only have the Air Permit Package reviewed and approved by WCAPCD before our upcoming Facility Act 64 Permit Reapplication, but also to address the issue of ambiguity associated with various special conditions listed in our current permits, we would appreciate any actions taken by WCAPCD to expedite the review process of our Application Package. Please note that our initial request dates back to our letter of January 07, 1991, and we have already worked with several Department persons, each of whom has expressed a high level of cooperation that directed us toward additional efforts and expenses, and in the end accomplished little or nothing productive.

In addition, in reference to the site visit on 06/02/93 by WCAPCD staff members, namely Jamal Naas and Qaiser Baig, and Mr. Naas' memo of 06/03/93 to WCAPCD file, Dynecol has the following comments:

(1) Based on a telephone conversation between Mr. Naas and our Facility Manager, Mr. Dave Lobbestael, a few days prior to the visit, Mr. Naas stated that the purpose for his visit on June 02 was strictly for orientation and familiarization with our facility activities. An in-depth site inspection was carried out instead of the originally requested "informal site tour." Dynecol

views this action as a misrepresentation of agenda on Mr. Naas' part during his scheduled visit to our facility.

(2) In response to Mr. Naas' internal memo (06/03/93) to file, pertaining to his inspection of 06/02/93, Dynecol views Mr. Naas' action of filing this report to be an unconscionable action on the part of WCAPCD. Mr. Naas repeatedly ignored Dynecol's numerous requests for a formal summary of his 06/02/93 inspection findings, thus denying Dynecol any opportunity to respond to allegations raised in his memo of June 03. Through Freedom of Information, we obtained a copy of the letter which we found replete with errors of facts and unsubstantiated allegations. Unless Dynecol is formally notified by WCAPCD of the alleged violations that were found during Mr. Naas' visit of our facility on June 02, we demand the removal of Mr. Naas' memo of 06/03/93 from our regulatory file.

Your prompt reply to the above issues will be greatly appreciated.

Yours truly,

Tien H. Pham
Manager, Technical Services

cc: Mr. Frank Biermann, Dynecol, Inc.
Mr. Dave Lobbestael, Dynecol, Inc.
Mr. Alvin Sheans, WCAPCD
Mr. Robert Zabick, WCAPCD
Mr. Thomas Vincent, WCAPCD

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DEPARTMENT OF PUBLIC HEALTH
WAYNE COUNTY

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Medical Director

May 18, 1993

Mr. Dave Lobbestael
Dynecol, Inc.
6520 Georgia
Detroit, Michigan 48211

SUBJECT: Installation of a Scrubber to Service Processing Tanks at Dynecol, Inc.

Dear Mr. Lobbestael:

In order to submit an Installation Permit Application for a possible source of air contaminant emissions, supporting information is required. Please submit the following information as soon as possible:

* Completed Installation Permit Application forms with $40.00 each for: new scrubber, hazardous waste storage tanks #7 and #8, primary treatment tanks #1 through #4. Please use one form for each tank.

* Site Diagram - A scaled drawing showing the plan view of the property to the boundary lines, including heights of all structures. Proposed equipment should be shown as well as all structures within 150 feet of the proposed equipment. North direction should be indicated as well as the street address. Please identify all existing and proposed equipment like the tanks, scrubbers, carbon adsorption unit, etc.

* Process Description - A complete description of the treatment processes which will be used to treat the wastes with previously unmentioned waste codes must be provided. Explain the maximum VOC content of the new wastes as well as the throughputs for the tanks to be used in processing these wastes. Explain how the processing will change from that being performed now, if at all. A process flow sheet may be helpful. If possible, give an estimate of emissions from the processing of these new wastes. If you feel emissions will not change with the inclusion of these new waste codes, please explain why. Explain how emissions will be collected (i.e. diagram of the ventilation system to these tanks) from the

processing of these wastes and where and how these emissions will be routed to the scrubber or through the scrubber and carbon adsorption system. Without a good justification for not routing these emissions through the existing carbon adsorption system, exhausting of these emissions through the carbon adsorption system will be required, regardless of the expected impacts.

* Scrubber - For installation of a scrubber, please include the following information: type of scrubber, (assuming packed bed scrubber) catalog cut sheet, flow diagram, chemical compositions of all streams, temperatures of all streams, flow rates of all streams, pressure drop data, equilibrium data, height of a transfer unit and calculations, number of transfer units and calculations as well as packing data, diagram of scrubber as well as efficiency.

* Storage Tanks - For installation of storage tanks, please include the following: diagram of the tanks, capacity, description of the items to be stored in the tank, temperature, vapor pressure of the components, density of the components, mole fraction of the components and throughput for the tanks.

If you have any questions regarding this letter or your permit application, please call me at (313) 832-5003, ext. 317.

Sincerely,

Lillian L. Woolley

Lillian L. Woolley
Air Pollution Control Engineer

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DEPARTMENT OF PUBLIC HEALTH
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April 27, 1993

Mr. Dave Lobbestael
Dynecol, Inc.
6520 Georgia
Detroit, Michigan 48211

SUBJECT: Stack Testing as Required under Letter of Conditions dated September 17, 1991, for a Regenerative Carbon Adsorption Unit

Dear Mr. Lobbestael:

I have spoken with Jamal Naas of the Enforcement Section of the Division and we agree that stack testing for the carbon adsorption unit can take place after the permit package for revisions to the June 13, 1986, letter of conditions has been reviewed and approved. This means that the Division will notify you when stack testing should take place, as a part of the permit letter detailing revisions to be made in waste codes handled at your facility, and is not dependent on the trial operating period identified in the letter dated September 17, 1991.

If you have any questions regarding this letter, please contact me at (313)832-5003, ext. 317.

Sincerely,

Lillian L. Woolley

Lillian L. Woolley
Air Pollution Control Division

MEMORANDUM ■ WAYNE COUNTY HEALTH DEPARTMENT
Air Pollution Control Division

To: Jamal Naas, Enforcement Engineer

From: Lillian Woolley, Air Pollution Control Engineer LW

Subject: Dynecol: Proposed Stack Testing After the Installation of a Carbon Adsorption System

Date : April 27, 1993

Dynecol has requested revisions to some permits (C-6917, C-6977 through C-6980) which I am beginning work on now. Because these revisions will involve the stack to be tested under the letter of permit conditions dated September 17, 1991, for a regenerative activated carbon adsorption unit, I am asking that stack testing be postponed until my review has been completed. Once my review has been completed, testing of the unit can take place which will give a much better indication of the performance of the unit as well as expected emissions.

cc: Tom Vincent, Area Inspector
Bob Zabick, Enforcement Supervisor

Lillian Woolley:

This sounds reasonable. Stack testing will take place once current permit package has been reviewed.

Jamal N. Naas
Jamal Naas

Appendix D.1a

Basis of Design and Design Capacity

DYNECOL CONTAINER MANAGEMENT FACILITY
BASIS OF DESIGN

I. General Building Configuration

The building was designed on the basis that it will contain flammable liquids. The building was designed to meet all applicable BOCA, NFPA, and NEC codes for storage of Class I, II, III liquids. The general design of the building is as follows.

- Overall size: 95 feet by 122 feet.
- Two loading docks.
- Eight isolated container storage bays.
- Blind sumps for each bay.
- Inside clearance of 15 feet.
- Concrete floor with continuous chemical resistant coating.
- Walls rated at 4 hour fire protection.
- All dooors will be 3 hour fire rated.

II. Truck Well Loading Docks

- Overall size: 32 feet by 60 feet.
- Containment: 7,000 gallons in coated area; 16,362 total in truck well.
- Truck well accessories: truck bumpers; mechanical levelers; access ladder.
- Ventilation: No mechanical ventilation is provided. Natural ventilation will be provided by open space in exterior building wall (a portion of the wall is covered to reduce the amount of precipitation infiltration).
- Floor coating: Acid, caustic, organic resistant. Containment area, as well as truck well area floors will be coated to a level of 7,000 gallons of liquid accumulation.

III. Container Storage and Transfer/Bulking Area

- Maximum Permitted Volume: 41,000 gallons (711, 55 gallon drums and one 1,900 gallon storage tank).
- Eight isolated storage bays: 21.5 feet by 19 feet nominal, for isolation of incompatible wastes.
- Drum storage: Two levels maximum; second level on pallet or plywood. Aisle space between each double row of drums and walls is provided for the unobstructed movement for personnel, fire protection equipment, and spill control/decontamination equipment during an emergency. In bays containing flammable liquids, drums will be stored such that no drum is located further than 12 feet from the main aisle.
- Maximum capacity of container storage area: 60 drums per level, per bay; 120 drums total (6,600 gallons per bay).
- Containment: Each bay is capable of containing a minimum of 1220 gallons (more than 10 % of maximum stored volume). Each bay also contains a blind sump that will be used to remove spilled waste from the bay. A sump will also be provided in the bulking/tranfer area to collect spills, leaks.

- Floor coating: Acid, caustic, and organic resistant. Total floor surface will be coated, as well as the bottom 8 inches of the isolation walls separating the storage bays.

IV. Site Conditions

- Minimum 50 foot setback from all property lines.
- Relocation of 9 electric lines, 1 telephone cable, 4 power poles, and 1 pole mounted transformer to allow installation of building. A portion of the existing 12 inch storm sewer line located under the building location was abandoned and plugged.
- Site drainage: all roof drains and site run-off to be piped to storm sewer. Building elevation to be set 6 inches above existing grade to prevent infiltration of storm water into the building.
- Parking area: Bituminous pavement; gravel; crushed stone

V. General Building Mechanical Provisions

- Three overhead doors: Two are 9 feet by 10 feet; one is 10 feet by 10 feet.
- Water supply: Potable water (for washing and rinsing, etc.) will be supplied by a 1 inch service main. Service main will be metered per City of Detroit standard metering requirements. All interior piping to be Schedule 40 galvanized.
- Transfer piping: All transfer piping will be chemical-resistant pressure/vacuum hose. Hose design must meet Goodyear "Speclar" Blue or Green Flexwing specifications (or equivalent). All hoses will be constructed with an internal static grounding wire and when installed grounding wire is to be attached and grounded. Tanker-Bulking hose will be at least 2 inch and the Macro drum cleaning hose will be at least 4 inch. A total of five hoses is provided at the bulking/transfer area; one 2 inch for acids; one 2 inch for caustics; and one 2 inch for organics. Two 4 inch hoses are also provided for organics., i.e., one from the transfer/bulking area to the loading area and the other one from the transfer/bulking area to the 1,900 gallon storage vessel.
- Liquid transfer system: In order to maintain a negative pressure on the entire bulking operation, all materials will be transferred through the use of vacuum. All vacuum pumps will be positive displacement blower or vane type pumps designed for a minimum of 1000 CFM each.
- Compressed air piping system: Schedule 40 with threaded joints.
- Pumps: Any pumps will be positive displacement, air diaphragm type.
- Pumps will be designed to pump approximately 50 GPM.

VI. Building Heating and Ventilation

- Containment area: A minimum of 7400 CFM of heated ventilation air will be supplied (per NFPA regulations of 1cf/sf of floor surface) during winter months when heating is required. The temperature in the container storage area during winter months will be maintained at about 50-60 degrees Farenheit. During the summer months, air flow will be increased to 10,000 CFM.

- Transfer/bulking area: A minimum of 1,000 CFM of ventilation air will be supplied when bulking.

VII. Air Emission Controls

- Design flow: A minimum of 1,000 CFM, to treat the exhaust from the barrel/transfer area.
- System components:
  - Blower - A minimum of 1,000 CFM at 25 inches W.C.
  - Activated carbon canisters - Ecah canister contains a minimum of 1,800 pounds of activated carbon. One canister will be in operation with another one on standby. The second unit will be put into operation when the first canister reaches breakthrough detection.
  - Breakthrough will be detected by a flame ionization detector. When organic vapors are detected over the preset limit, the carbon unit will be taken off line and the activated carbon regenerated. Contact time in the carbon bed is 3 to 4 seconds. This will allow sufficient time for a majority of the organic vapors to be absorbed. Approximately 85-90% removal is achieved with the use of activated carbon. The concentration and type of contaminant will determine the carbon use rate.

VIII. Electrical

- Electrical: All electrical components located within the container storage area or transfer/bulking area (which are hazardous areas as defined by the National Electric Code) will be explosion proof (Class I Division II). A grounding system will be installed in the bulking/transfer area to allow drums to be grounded during bulking/transfer operations.
- All electrical service lines, conduits, etc., will be routed overhead; no conduits or wiring will penetrate bay containment/separation walls.
- The mechanical room will be segregated from the hazardous storage area and will be rated according to its use.

IX. Fire Protection

- Service main to building: 8 inch water main.
- Piping: Below grade; ductile iron (or equivalent). Above graded; Schedule 40 standard weight steel pipe (or equivalent).
- Bay number 1: Dry chemical with standard heat detection and 6 - 50 pound dry chemical cylinders.
- Storage area and loading dock area: Closed head foam/water sprinkler. System proportioned at 3% - 16 gallons design rate based on a maximum of 2000 square feet for a 15 minute run time with a bladder tank.

X. Macro Drum Cleaning

- Prior to the drums leaving the bulking/transfer area, all viscous residuals remaining in the drums will be generally removed. This may require the deheading of the drum. Deheading will be performed in the bulking/transfer area with the use of a mechanical or pneumatic operated, non-spark drum deheader.
- The remaining contents of the drum will be removed via the appropriate vacuum line.
- All materials will be collected in either one 1,900 gallon storage tank or in a vehicle suitable for off site transport. Upon completion of each bulking batch, the material collected in the storage tank will either be transferred into a bulk transport for shipment off-site or will be reintroduced into the facility in containers for further management.

XI. Micro Drum Cleaning

- Upon completion of the bulking/transfer process, the drums will generally be high pressure washed.
- Organic drums will typically be washed separately from inorganic drums.
- The wash waters will be collected and treated in the treatment plant or disposed off-site.
- The waste generated in the micro drum cleaning process will be managed in compliance with both Act 64 and 40 CFR.
- After the drum washing process is completed, the drums will generally be crushed for either recycling or disposal.

Appendix D.1b

Facility Drawings for Container Management Facility

Appendix D.1c

Equipment Specifications for Container Management Facility

Appendix D.1d

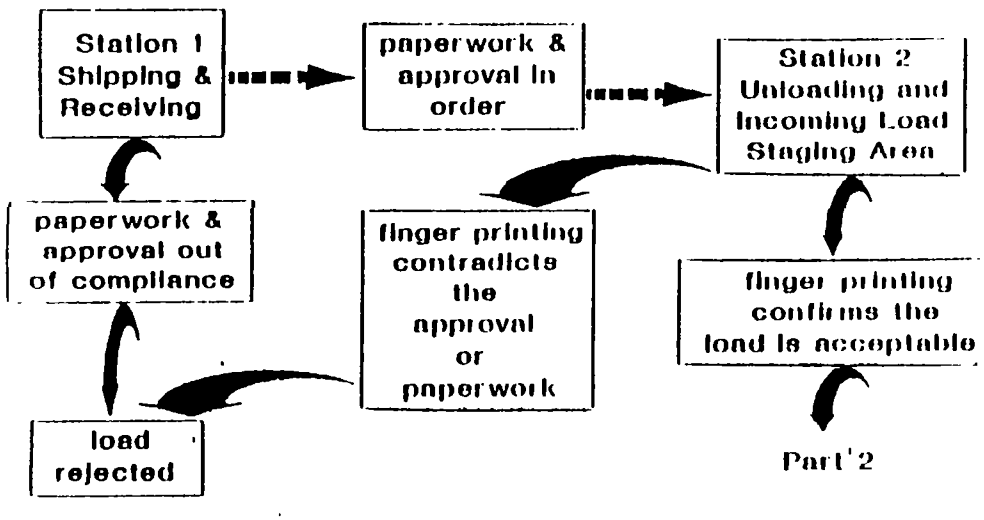
Container Management Facility Secondary Containment Calculations

Please refer to Drawing #6A in Appendix D.1b for drawings of containment structures and secondary containment calculations for the container management facility.

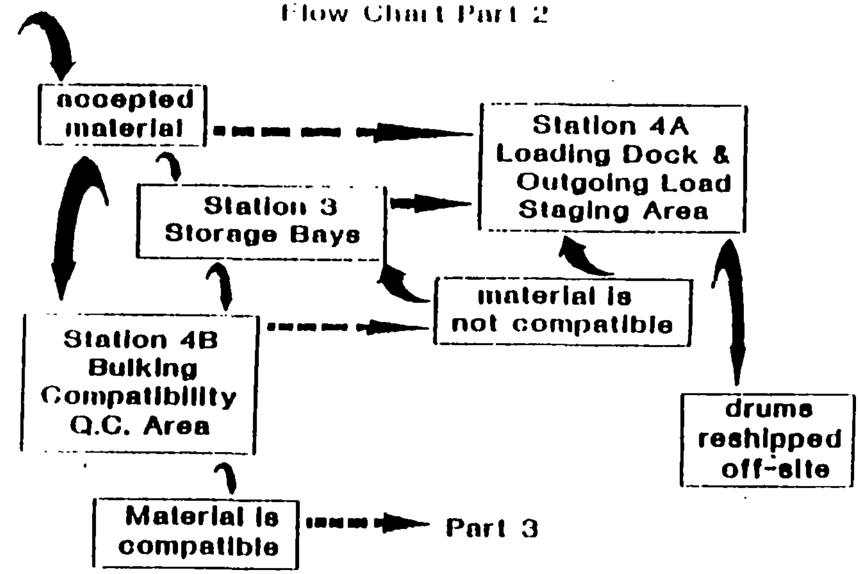
Appendix D.1e

Container Handling Flow Chart

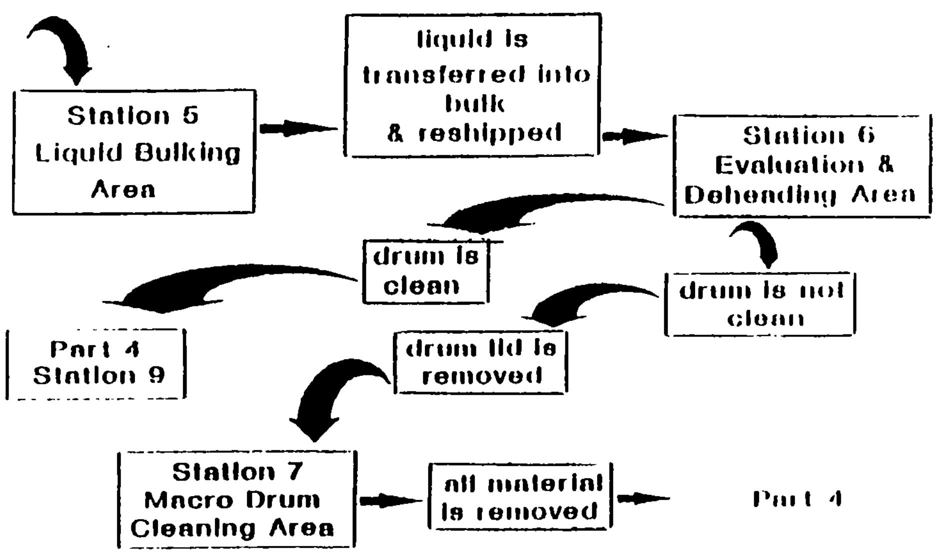
Flow Chart Part 1



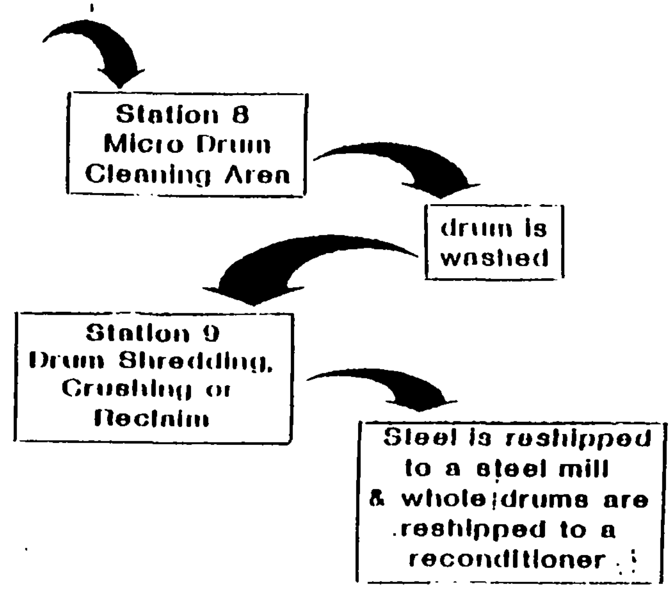
Flow Chart Part 2



Flow Chart Part 3



Flow Chart Part 4



APPENDIX D.2

BULK TREATMENT PLANT

Appendix D.2a

Basis of Design and Design Capacity

BASIS OF DESIGN AND DESIGN CAPACITY

BULK TREATMENT FACILITY

I. GENERAL

A. Treatment of hazardous and non-hazardous wastes, sludges and other wastes generated off-site.

B. Design capacity: 144,000 gallons per day in a 24-hour per day operation (average flow rate: 100 gpm)

C. Primary treatment: Three (3) 20,000-gallon rubber-lined steel tanks

D. Secondary treatment: Four (4) 20,000-gallon FRP tanks

E. Sludge dewatering: Two (2) 167-cubic foot recessed chamber filter presses.

F. Carbon filtration: Two (2) 1,000-pound carbon filters

G. Listed Hazardous Waste treatment system: One (1) 20,000 gallon working capacity treatment vessel and One (1) 100 cubic foot recessed chamber filter press.

II. PRIMARY TREATMENT SYSTEM

A. General Equipment

1. Tanks: Three (3) 20,000-gallon rubber-lined steel tanks
2. Containment System: concrete with New Generation 100 coating by Spartan Chemicals (or equivalent).
3. Mixing: compressed air system and sparger.
4. pH Control System: Lakewood Model 820 (or equivalent).
5. Chemical Feed system: lime slurry feed system and/or caustic/caustic pot ash feed system.
6. High level alarm with overfill protection.
7. Vent: discharge to air emissions control scrubber.

B. Treatment Process: Oxidation, Reduction, Neutralization on batch basis.

1. Liquid transfer from bulk tanker to primary tanks via hose and piping system: Q= 200 GPM avg.

2. Control: manual with continuous supervision from control room.

3. Typical treatment volume: 12,000 gallons

4. Mixing: continuous via air sparger system

5. Chemical Addition:
   . caustic/caustic pot ash/lime slurry solution via pump system with typical feeding rate of 120 GPM.
   . sodium bisulfite solution via pump system with typical feed rate of 100 GPM.
   . ferrous sulfate/chloride or ferric chloride solution via pump system with typical feed rate of 200 GPM.
   . activated carbon powder via top opening of tank.

6. Neutralization: following oxidation/reduction process, and as follows:
   . neutralization to a typical pH range of 5.0 to 6.0 (volume increase: generally about 30%).
   . treatment time: variable, depending on initial pH and/or initial acid concentration (average: 2 hours).
   . transfer to secondary treatment system via one of two transfer pumps (typical feed rate of 320 GPM) and CPVC (or equivalent) piping system.

III. SECONDARY TREATMENT SYSTEM

A. General Equipment

1. Tanks: Four (4) 20,000 gallon FRP tanks in vertical position with cone bottom.

2. Containment System: concrete with New Generation 100 chemical resistant coating (or equivalent).

3. Transfer Pumps: Two (2) centrifugal pumps rated at approximately 320 GPM.

4. Mixing: Two (2) mechanical mixers, 25 HP side-mount and 5 HP bottom mount agitators by Process Equipment Company (or equivalent).

5. pH Control System: Lakewood Model 520 probe and 900 Controller (or equivalent).

6. Chemical Feed System: lime slurry feed system.

7. Process Piping: CPVC (or equivalent).

8. Vent: discharge to air emissions control scrubber.

9. High-level alarm and overfill protection.

B. Treatment Process: Neutralization, chemical precipitation, flocculation, detoxification, clarification, sedimentation, chemical fixation, and lime stabilization on batch basis.

1. Liquid transfer from primary to secondary tank via process piping, valves and transfer pumps.

2. Valves: air actuated, spring to close remote operation from the main control panel.

3. Treatment Volume: 8,250 gallons.

4. Mixing: continuous via two mechanical mixers per tank.

5. Chemical addition: lime slurry transfer pump rated at approximately 300 GPM.

6. pH adjustment to typical range from 7.0 to 10.5 depending on the type of waste being treated.

7. Transfer to filtration process via two air diaphragm pumps rated at approximately 120 GPM each.

8. Average Flushing Time: 5 minutes.

IV. DEWATERING SYSTEM

A. General Equipment

1. Two (2) 167 cubic foot recessed chamber filter presses by Durco.

2. Operating Pressure Range: 90-100 psig.

3. Plate Material: polypropylene (or equivalent).

4. Cloth Material: Crossible polypropylene 89X (or equivalent).

5. Hydraulic Closing Mechanism: semi-automatic with maximum pressure of 3,600 psi.

6. Feed Pump: dual air operated diaphragm pumps with neoprene diaphragms (or equivalent).

B. Operating Discussion

1. Filtrate Volume: 8,500 gallons average.

2. Feed Rate: variable, average = 120 GPM.

3. Average Filtration Period: 75 minutes.

4. Average Cake Dumping Time: 45 minutes.

5. Average Clean-up Time: 2 Hours.

6. Average Cycle Time: 4 hours.

7. Typical Sludge Volume: 167 cubic feet per cycle and 195 cubic yards per day (average at 144,000 GPD treatment rate.

V. LISTED WASTES/OTHER LISTED WASTES TREATMENT SYSTEM

A. General Equipment

1. Tank: One (1) 20,000 FRP tank in vertical position with cone bottom.

2. Containment System: as defined for Tank Farm Building (#2).

3. Mixing: Two (2) mechanical mixers, 25 HP side mount and 5 HP bottom mount.

4. pH Control System: Lakewood Model 520 probe and 900 controller (or equivalent).

5. Chemical Feed Systems: Lime slurry feed system, and other treatment reagents feed systems.

6. Process Piping: CPVC (or equivalent).

7. Vent: Discharge to Air Emissions Control Scrubber.

8. High level alarm and overfill protection.

9. Valves: Air actuated, spring closed for remote operations from the main control panel.

10. Dewatering: One (1) 100 cubic foot recessed chamber filter press with typical specifications as follows:
   - Operating Pressure Range: 90-100 psig.
   - Plate Material: Polypropylene (or equivalent).
   - Cloth Material: Crossible Polypropylene 89 X (or equivalent.
   - Feed Pump: Dual air diaphragm pumps.
   - Filtrate Volume: typically 5,000 gallons.
   - Feed Rate: variable, average = 120 GPM.
   - Average Filtration Period: 50 minutes.
   - Average Cake Dumping Time: One hour.
   - Average Clean-up Time: 1 Hour.
   - Average Cycle Time: 2 Hours.

. Typical Sludge Volume: 100 cubic feet per cycle.

B. Treatment Process: Batch Basis. Typically includes primary and secondary processes (as described in parts II(B) and III(B).

VI. LIME FEED SYSTEM

A. General Equipment

1. Storage Silos: two (2) 12-feet diameter by 60-feet high (5,000 cuft each).

2. Slurry System: 750 gallon tank with mixer, volumetric feeder, level control, etc.

3. Dust Filter: 180 sq. ft. Whirl-Air-Flow.

B. System Capacity

1. Typical Usage: peak 66,800 lbs/day of hydrated lime over 24 hours.

2. Slurry System: 20 % lime (maximum).

3. Typical Water Requirement: 22-60 GPM.

4. Typical Feed Rate: 300 GPM (Peak), 60 GPM (Average).

VII. AIR EMISSIONS CONTROL SYSTEM

A. General Equipment

1. Model 734-XL Heil Fume Alkaline Scrubber with a capacity of 5,000 CFM, 200 DEG F (maximum) at 4-inch water pressure.

2. Recirculation Pump: Vanton Model CG-PY 800, 3HP, 1750 RPM, rated at 75 GPM, 40-foot head (or equivalent).

3. pH System: Great Lakes Instrument, Model #A72-1-1-2-3, and probe # 6030PO (or equivalent).

4. Chemical Pump: Chem-Tech Model #2-120, PVC and Teflon fittings, rated for 0-120 GPD (or equivalent).

5. Centrifugal fan: HCL-20 Heil blower, 10 HP, 1800 RPM, 5000 CFM (or equivalent).

B. Design Capacity

1. Controls vapor and off gases from the three primary treatment tanks, the hazardous waste storage tank, the

four secondary treatment tanks, and certain storage tanks within the tank farm building.

2. Alkaline wet scrubber is capable of controlling nearly all vapors emitted from the treatment and storage processes.

C. Additional Control System for Certain TCLP Organics

Air emissions from the treatment of certain TC organics in treatment tank #3 will be directed through a caustic scrubber with a capacity of 500 CFM and then through the activated carbon adsorption system in the container management facility. The caustic scrubber will have the typical specifications as follows:

- Met-Pro Duall Division Model FW-300 (or equivalent).
- Capacity: 500 CFM
- Temperatures: Exhaust = ambient
  Scrubbing solution = ambient
- Scrubbing Solution: Water and caustic
- Scrubbing Solution Flow Rate: Approximately 5 GPM
- Pressure Drop: Approximately 3 in WC
- Height of Packing: Approximately 20 inches
- Packing Description: Random-dumped, high efficiency polypropylene
- Efficiency: > 80 % on acid gases

VIII.CARBON ADSORPTION SYSTEM

A. General Equipment

1. Filtration Unit: two 1,000-pound filter vessels.

2. Valving: full isolation and control valving.

3. Sampling Port: following each unit.

4. Feed Rate: Average = 50 GPM per carbon vessel.

B. Operating Discussion

1. Usage: 1,000 pounds of activated carbon. Adsorption capacity is dependent upon filtrate stream constituents.

2. Filtration System: primary (Flter presses) and secondary(in-line filter system).

3. Monitoring: periodic checks for applicable organics in effluent of the unit in use to determine possible breakthrough. At confirmation of breakthrough, the feed is rerouted through the second filter unit.

IX. CONTROL SYSTEM

A. General Equipment

1. Main control board and graphics panel
2. Pump and motor, start-stop control
3. Valve actuator controls
4. Level, pH indicators and recorders
5. Running and alarm lights

B. Operations

1. The control system is designed to provide full treatment system feedback and control from the control room.

X. OPERATION PROCEDURE SUMMARY

Treatment system control procedures are outlined below.

A. Typical Operations Sequence

The Batch Treatment Tables (Exhibits A, B, and C) provide a typical treatment sequence including start and stop times, volumes, etc. Tank numbers correspond with actual tank labels at Dynecol.

B. Instrument Calibration

Calibration of pH instruments and level transmitters is routinely performed by either trained maintenance personnel or outside contractor.

C. Console Operating Sequence

1. Turn <u>Control Power</u> Selector Switch on. The <u>Power On</u> light will come on. The audio alarm will usually sound because the batch treatment tanks are empty. The <u>Low Alarm</u> lights will be flashing. Press the <u>Silence</u> pushbutton. The audio alarm will silence and the flashing alarm lights will go to steady ON.

2. All valves should be closed and their associated selector switches on their auto position. The auto position allows valves and pumps to open and close on demand from the programmable controller computer.

3. Determine which primary tank has been treated and manually connect that tank via a hose to the desired transfer pump, i.e., P1/P2. Open the manual valve

flushes will occur as follows:

a. Flushing of the pH control loop occurs.
   1) P18 stops and V23 closes.
   2) V24 water flush valve opens and flushes water into T18 for 90 seconds to clean that section of the piping.
   3) V24 closes, V23 opens, and P18 starts for another 90 seconds. The pump, pH sensor, and pipes are flushed.
b. Flushing of the Lime Feed System.
   1) P25 is already off and the valves are closed.
   2) Valve V14 water flush and V172 will open for 90 seconds, flushing the lime back into the day tank T14 or T23.
   3) V172 closes, V173 and V10 open, and P25 starts. The piping section between P25 and T18 will be flushed for 90 seconds.
c. After the flushing of all valves and pumps is done, the filtering step light will flash. This indicates that all conditions are ready to go to the filtering step.
d. The agitators continue to run to keep the solids from settling.

8. The operator must decide which filter press is clean and ready to accept sludge. The sludge feed pumps will not start without adequate hydraulic pressure on the press.
   a. Select the treatment tank to press by turning the selector switch for Press A to the T18 position.
   b. Press the <u>Start Feed</u> to Press A pushbutton and V15 will open and AP3 and AP4 will start and fill Press A.
   c. When the press is full, the High Inlet Pressure Alarm will sound and the light will flash until silenced. If the batch tank is not yet empty, <u>do not</u> push the Stop Feed to Press A pushbutton. To clean the press and continue filtering, the manual inlet valve to the press must be closed, the press emptied and the valve reopened, thus allowing more of the sludge from T18 to be filtered.
   d. If the tank becomes empty before the press is full, press the Stop Feed to Press A pushbutton.
      1) AP3 and AP4 will stop.
      2) V15 will close.
      3) The OFF sequence light will come on.

9. Notes of Clarification
   a. Transfer Pump P1 can pump to T18, T19, T20, or T21. P2 can also pump to any of these tanks. However, due to the fact that they share some common valves and pipes, it is set up so that they cannot crossover.
      EXAMPLE: If P1 is pumping to T20, we cannot allow P2 to pump to T19 or T18. Any time the pump to

treatment tank selectors get into a crossover not allowed position, the Sequence Not Allowed alarm will sound, and it cannot be silenced. Any pump that is running, when this alarm sounds, will stop and will have to be restarted.

b. It is, however, permissible for both P1 and P2 to fill the same tank.

c. The lime feed system is large enough for several tanks to be in the treatment step at the same time.

d. Press A or B can receive sludge from T18, T19, T20, or T21. Due to the fact that they share some pipes and valves, it is set up so that they cannot crossover.
EXAMPLE: Tank T19 is being filtered through Press B. T20 or T21 cannot go to Press A. Any time the treatment tank selectors get put into a crossover not allowed position, the Sequence Not Allowed alarm will sound and it cannot be silenced. Any air pumps running, when this alarm happens, will stop and will have to be restarted.

e. It is allowable, but not recommended, to let one press filter two tanks at the same time.

10. The filtrate from each press goes to either holding tank 30 or 31. The filtrate will be discharged to the City Sewer system via a centrifugal pump, after a check on the quality of the filtrate is performed.

EXHIBIT A

ANK 4	BATCH #1	BATCH #5	BATCH #9
Starting Volume	12,000	12,000	12,000
Ending Volume	15,600	15,600	15,600
Start Treatment	4 a.m.	8:05 a.m.	4:05 p.m.
Stop Treatment	4:30 a.m.	8:35 a.m.	4:35p.m.

TANK 18	BATCH #1		BATCH #5		BATCH #9	
Starting Volume	8250	7350	8250	7350	8250	7350
Ending Volume	9900	8820	9900	8820	9900	8820
Start Filling	4:30 a.m.	6:35 a.m.	8:33 a.m.	2:35 p.m.	4:35 p.m.	12:40 a.m.
Stop Filling	5:00 a.m.	7:05 a.m.	9:05 a.m.	3:05 p.m.	5:05 p.m.	1:10 a.m.
Start Treatment	5:00 a.m.	7:05 a.m.	9:05 a.m.	3:05 p.m.	5:05 p.m.	1:10 a.m.
Stop Treatment	5:15 a.m.	7:20 a.m.	9:05 a.m.	3:20 p.m.	5:20 p.m.	1:25 a.m.

PRESS A	BATCH #1		BATCH #5		BATCH #9	
Start Filtering	5:15 a.m.	7:20 a.m.	1:15 p.m.	3:20 p.m.	11:20 p.m.	1:25 a.m.
Stop Filtering	6:35 a.m.	8:30 a.m.	2:35 p.m.	4:30 p.m.	12:40 a.m.	2:35 a.m.
Net Volume	9900	8820	9900	8820	9900	8820
Start Dumping	6:35 a.m.	8:30 a.m.	2:35 p.m.	4:30 p.m.	12:40 a.m.	2:35 a.m.
Stop Dumping	7:15 a.m.	9:15 a.m.	3:20 p.m.	5:15 p.m.	1:25 a.m.	3:20 a.m.
Ready	7:15 a.m.	9:15 a.m.	3:20 p.m.	7:20 p.m.*	1:25 a.m.	3:20 a.m.

*Wash edge of filter trays (2 hours, 5:20 p.m. - 7:20 p.m.).

EXHIBIT B

ANK 2	BATCH #2		BATCH #6		BATCH #10		BATCH #12	
Starting Volume	12,000		12,000		12,000		12,000	
Ending Volume	15,600		15,600		15,600		15,600	
Start Treatment	4:30 a.m.		8:35 a.m.		12:40 p.m.		8:10 p.m.	
Stop Treatment	5:00 a.m.		9:05 a.m.		1:10 p.m.		8:40 p.m.	
TANK 19								
Starting Volume	8250	7350	8250	7350	8250	7350	8250	7350
Ending Volume	9900	8820	9900	8820	9900	8820	9900	8820
Start Filling	5:00 a.m.	7:05 a.m.	9:05 a.m.	11:10 a.m.	1:10 p.m.	6:40 p.m.	8:45p.m.	10:50 p.m.
Stop Filling	5:30 a.m.	7:35 a.m.	9:35 a.m.	11:40 a.m.	1:40 p.m.	7:10 p.m.	9:15 p.m.	11:20 p.m.
Start Treatment	5:30 a.m.	7:35 a.m.	9:35 a.m.	11:40 a.m.	1:40 p.m.	7:10 p.m.	9:15 p.m.	11:20 p.m.
Stop Treatment	5:45 a.m.	7:50 a.m.	9:50 a.m.	11:55 a.m.	1:55 p.m.	7:25 p.m.	9:30 p.m.	11:35 p.m.
PRESS B								
Start Filtering	5:45 a.m.	7:50 a.m.	9:50 a.m.	11:55 a.m.	5:20 p.m.	7:25 p.m.	9:30 p.m.	11:35 p.m.
Stop Filtering	7:05 a.m.	9:00 a.m.	11:10 a.m.	1:05 p.m.	6:40 p.m.	8:45 p.m.	10:50 p.m.	12:45 a.m.
Net Volume	9900	8820	9900	8820	9900	8820	9900	8820
Start dumping	7:05 a.m.	9:00 a.m.	11:10 a.m.	1:05 p.m.	6:40 p.m.	8:45 p.m.	10:50 p.m.	12:45 a.m.
Stop dumping	7:50 a.m.	9:45 a.m.	11:55 a.m.	1:50 p.m.	7:25 p.m.	9:30 a.m.	11:35 p.m.	1:30 a.m.
Ready	7:50 a.m.	9:45 a.m.	11:55 a.m.	5:20 p.m.*	7:25 p.m.	9:30 p.m.	11:35 p.m.	1:30 a.m.

*2 hours for cleaning edges of filter bags (3:20 p.m. - 5:20 p.m.).

EXHIBIT C

ANK 3

	BATCH #3		BATCH #7		BATCH #11	
Starting Volume	12,000		12,000		12,000	
Ending Volume	15,600		15,600		15,600	
Start Treatment	5:00 a.m.		9:05 a.m.		1:20 p.m.	
Stop Treatment	5:30 a.m.		9:35 a.m.		1:50 p.m.	

TANK 20

Starting Volume	8250	7350	8250	7350	8250	7350
Ending Volume	9900	8820	9900	8820	9900	8820
Start Filling	5:30 a.m.	7:35 a.m.	9:45 a.m.	11:50 a.m.	1:45 p.m.	10:40 p.m.
Stop Filling	6:00 a.m.	8:05 a.m.	10:15 a.m.	12:20 p.m.	2:15 p.m.	11:10 p.m.
Start Treatment	6:00 a.m.	8:05 a.m.	10:15 a.m.	12:20 p.m.	2:15 p.m.	11:10 p.m.
Stop Treatment	6:15 a.m.	8:35 a.m.	10:30 a.m.	12:35 p.m.	2:30 p.m.	11:25 p.m.

PRESS C

Start Filtering	6:15 a.m.	8:35 a.m.	10:30 a.m.	12:35 p.m.	9:20 p.m.	11:25 p.m.
Stop Filtering	7:35 a.m.	9:45 a.m.	11:50 p.m.	1:45 p.m.	10:40 p.m.	12:35 a.m.
Net Volume	9900	8820	9900	8820	9900	8820
Start Dumping	7:35 a.m.	9:45 a.m.	11:50 a.m.	1:45 p.m.	10:40 p.m.	12:35 a.m.
Stop Dumping	8:20 a.m.	10:30 a.m.	12:35 p.m.	2:30 p.m.	11:25 p.m.	1:20 a.m.
Ready	8:20 a.m.	10:30 a.m.	12:35 p.m.	3:20 p.m.*	11:25 p.m.	1:20 a.m.

*Wash edge of filter bags (2 hours, 7:20 p.m. - 9:20 p.m.)